Alberta traffic collision statistics

1988

Safety in Motion

Alberta
TRANSPORTATION
AND UTILITIES

ALBERTA

TRAFFIC COLLISION STATISTICS

1988

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1988
OVERVIEW

- The number of traffic **fatalities decreased 9.0%** over the past year from 510 deaths in 1987 to 464 deaths in 1988.

- The number of **traffic injuries decreased 5.2%** over the past year from 19,809 injuries in 1987 to 18,777 injuries in 1988.

- The number of **traffic collisions increased 13.1%** over the past year from 97,493 collisions in 1987 to 110,264 collisions in 1988.

- **Casualty collisions** occurred most frequently between **June and August.**

- **Friday** was the most collision-prone day of the week. However, the majority of fatal collisions occurred on Saturday.

- The most collision-prone period of time was the **afternoon rush-hour.**

- **Fatal collisions** occurred most frequently in **rural areas,** whereas **injury and property damage only collisions** occurred more frequently in **urban areas.**

- **Casualty rates** were highest for persons between the **ages of 15 and 24.**

- **Male drivers** between the **ages of 18 and 19** were most likely to be involved in casualty collisions.

- **Driver error** was cited in 54.3% of casualty collisions.

- **29.7% of drivers** involved in **fatal crashes had consumed alcohol prior to the crash** compared to **11.3% of drivers in injury crashes.**

- Most of the fatally injured occupants were not restrained at the time of the crash. However, the majority of occupants who were restrained at the time of the crash sustained only minor injuries.

PREFACE

The purpose of this report is to provide an overview of the "who", "what", "when", "where", "why", and "how" of traffic collisions which occurred in Alberta during 1988. Although the report is general in nature, it pays particular attention to casualty collisions, that is, those collisions which resulted in death or injury. Since 1984, limited information is collected for crashes involving only property damage.

Legislation in Alberta requires that a traffic collision, which results in either death, injury or property damage to an apparent extent of $500.00 or more, be reported immediately to an authorized peace officer. The officer completes a standardized collision report form which provides information on various aspects of the traffic collision. This report is based on the data collected from these report forms.

The collision report form is issued with standard instructions to every police force within Alberta, to be completed by the officer attending the scene of a motor vehicle crash. Police priorities at the scene of a crash are to care for the injured, protect the motoring public and clear the roadway. Completion of the collision report form is a secondary, but necessary task.

After completion, the information on the collision report form is coded for input to computer files. The Provincial Traffic Crash Information System, which has been operational since 1978, undergoes several manual and computerized inspections each year in order to ensure maximum accuracy of the final data output.

Due to continuing police investigation, some numbers presented in this report may be subject to revision. It should also be noted that not all percentage columns will total 100 due to rounding error. However, the patterns and trends detailed in this report represent an accurate description of Alberta's traffic collision picture.

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Glossary

Alcohol Impaired	-	In the judgement of the police officer, driving ability was impaired by alcohol consumption. Whether or not the subject was actually charged is not taken into consideration by the collision report form.
Casualty Collision	-	A vehicle collision which results in either a fatality or personal injury.
Drinking Driver	-	Refers to those drivers judged by the police officer, as having been drinking prior to the crash or as being alcohol impaired at the time of the crash. Whether or not the driver was actually charged is not taken into consideration by the collision report form.
Fatality	-	A fatality is a death of a person that occurs as a result of a motor vehicle collision within 30 days of the collision.
Had Been Drinking	-	In the judgement of the police officer, the driver had recently consumed alcohol but his driving ability was not obviously impaired.
Major Injury	-	Persons with injuries or complaint of pain that went to the hospital and were subsequently admitted even if for observation only.
Minor Injury	-	Persons with injuries or complaint of pain that went to the hospital, were treated in emergency (or refused treatment) and SENT HOME without ever being admitted to the hospital.
Motorcyclist	-	Refers to drivers and passengers of motorcycles.
Occupant Casualties	-	Refers to people who were injured or killed as a result of a vehicle collision and were identified as being either a vehicle driver or passenger.
Property Damage Only	-	A vehicle collision which resulted in property damage only, to the extent of $500.00 or more.
Reportable Collision	-	A vehicle collision which resulted in death, injury or property damage greater than $500.00.
Rural	-	Any area outside of that defined as 'urban'.
Urban	-	Any area within the corporate boundaries of a city, town, or village.

1988 TRAFFIC COLLISION SUMMARY

INTRODUCTION

- During 1988, 110,264 traffic collisions were recorded on Alberta roadways. Property damage only crashes (over $500) represented 88.1% (97,141) of this total while 11.5% (12,728) were non-fatal injury collisions. Fatal crashes accounted for less than 0.4% (395) of the total reported collisions.

FIVE YEAR TRENDS

- Over the five year period, the fatality rate rose in 1985, but has fallen each year since. The fatal collision rate, in terms of 10,000 population, stands at 1.6 in 1988, a five year low.

- Non-fatal injury collision rates and non-fatal injury rates increased in 1985 and 1986, but fell again in 1987 and 1988. In 1988, the non-fatal injury collision rate, in terms of 10,000 population, stands at 53.1, down from 1987 (55.0).

- In terms of 10,000 population, property damage and total collision rates now stand at 405.6 and 460.4, respectively. This is an increase from 1987.

PROVINCIAL COMPARISONS

- In order to get a clear picture of Alberta's traffic injuries, in comparison to other provinces, rates rather than absolute numbers are utilized. In this instance, injury rates per 10,000 population were examined.

- In 1988, three provinces (British Columbia, Saskatchewan and New Brunswick) recorded higher fatality rates than Alberta in terms of 10,000 population.

Table 1.1

ALBERTA TRAFFIC COLLISIONS

1984 - 1988

Severity of Collision	1988	1987	1986	1985	1984
Fatal Collisions	395	425	430	432	401
Non-Fatal Injury Collisions	12728	13088	14383	12733	12100
Property Damage Only Collisions	97141	83980	82372	85224	76498
TOTAL Reportable Collisions	110264	97493	97185	98389	88999
Number Killed	464	510	523	533	470
Number Injured	18777	19809	22148	19855	18955
TOTAL Number of Casualties	19241	20319	22671	20388	19425

OBSERVATIONS

In 1988, the overall number of collisions increased 13.1% when compared to 1987. However, in 1988, injury collisions decreased 2.8% while fatal crashes decreased 7.1%. The number of fatalities has decreased by 9.0% from 1987 to 1988, and the number of injuries decreased by 5.2%. In terms of the past five years, overall collisions increased from 1984 to 1985, decreased in 1986, increased slightly in 1987, and rose in 1988.

Table 1.2

ALBERTA TRAFFIC COLLISION RATES

1984 - 1988

Severity of Collision	Per 10,000 Population*					Per 10,000 Licensed Drivers*					Per 10,000 Registered Vehicles*				
	1988	1987	1986	1985	1984	1988	1987	1986	1985	1984	1988	1987	1986	1985	1984
Fatal Collisions	1.6	1.8	1.8	1.8	1.7	2.2	2.3	2.4	2.4	2.2	1.8	2.0	2.1	2.1	1.9
Number Killed	1.9	2.1	2.2	2.3	2.0	2.6	2.8	2.9	3.0	2.6	2.2	2.4	2.5	2.6	2.3
Non-Fatal Injury Collisions	53.1	55.0	60.3	54.2	51.5	70.0	72.3	78.9	70.8	66.5	59.1	61.9	69.0	62.6	58.3
Number Injured	78.4	83.2	92.9	84.5	80.7	103.2	109.4	121.5	110.5	104.2	87.2	93.7	106.3	97.6	91.3
Property Damage Only Collisions	405.6	352.8	345.4	362.8	325.7	533.9	464.0	452.0	474.2	420.7	451.3	397.1	395.2	419.0	368.3
TOTAL Reportable Collisions	**460.4**	**409.6**	**407.5**	**418.8**	**378.9**	**606.1**	**538.7**	**533.4**	**547.4**	**489.4**	**512.2**	**461.0**	**466.3**	**483.7**	**428.5**

Table 1.2
(Continued)

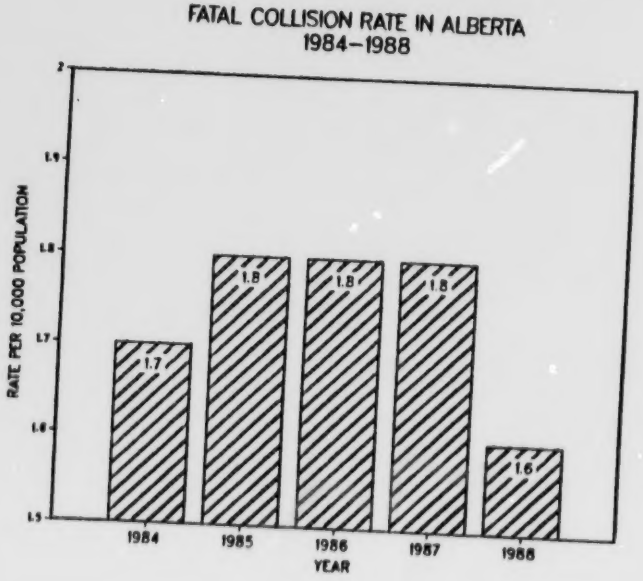
OBSERVATIONS

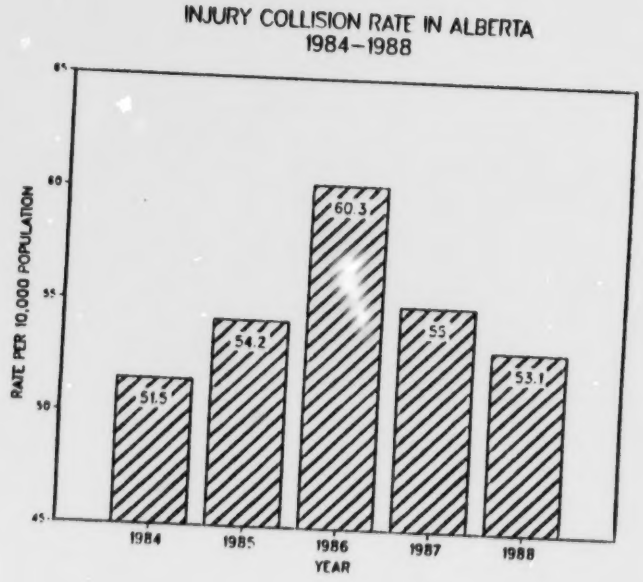
Fatal collision rates in terms of licensed drivers, population and registered vehicles remained almost constant until 1987, dropping slightly in 1988. In 1988 the non-fatal injury collision rate decreased over 1987, while property damage and total collision rates have increased.

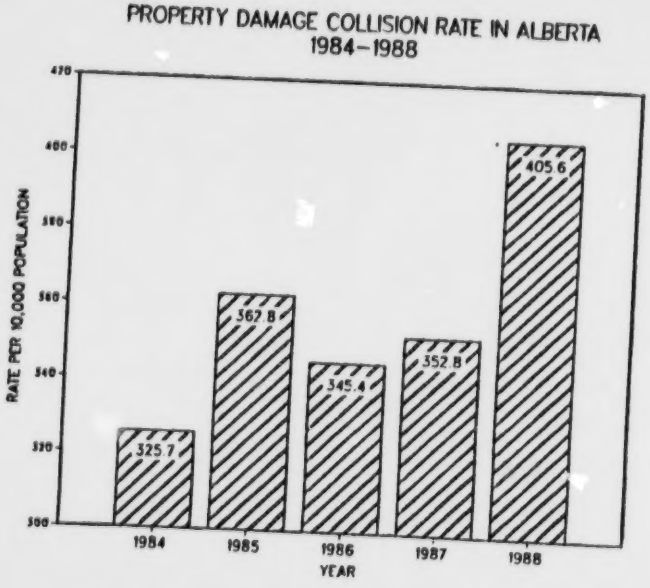
* Sources:

Licensed Drivers - Operator Statistics, Motor Vehicles Division, Alberta Solicitor General, December 31, 1988.
Population - Estimate, as of June 1, 1988, Statistics Canada, Demography Division, March, 1989.
Registered Vehicles - Motor Vehicles Division, Alberta Solicitor General, March 31, 1988.

ALBERTA TRAFFIC COLLISION RATES 1984–1988







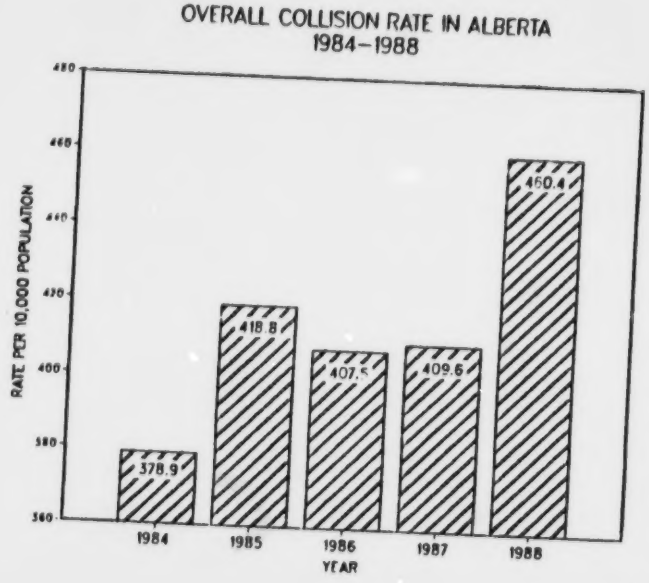


Figure 1

Table 1.3
Provincial Comparison of
Casualty Rates Per
10,000 Population
1984 - 1988

	1988		1987		1986		1985		1984	
	Fatal	Injury	Fatal	Injury	Fatal	Injury	Fatal	Injury	Fatal	Injury
Alberta	1.9	78.4	2.1	83.3	2.2	93.3	2.3	84.5	2.0	81.2
British Columbia	2.1	148.0	2.1	141.2	2.1	139.8	1.7	119.7	1.8	113.8
Saskatchewan	2.0	86.3	2.3	89.9	2.4	87.4	2.1	83.9	2.2	79.0
Manitoba	1.3	110.6	1.5	110.6	1.6	105.9	1.3	100.4	1.2	110.5
Ontario	*	*	1.3	130.7	1.2	119.4	1.3	121.2	1.3	109.2
Quebec	1.6	89.4	1.7	91.1	1.6	89.1	2.1	94.7	1.9	85.0
New Brunswick	2.3	99.3	2.1	96.2	1.8	88.2	2.0	80.8	2.2	78.8
Nova Scotia	1.7	*	1.8	64.5	1.5	57.7	1.8	60.5	1.7	48.1
Prince Edward Island	1.6	73.8	1.4	78.2	2.3	63.6	2.9	70.0	2.5	70.8
Newfoundland	1.0	57.5	1.0	53.6	1.0	45.8	1.2	44.8	1.1	38.1

Sources: Casualty statistics supplied by each province. Population estimates, as of June 1, 1988, Statistics Canada, Demography Division, March 1989.

OBSERVATIONS

During 1988, for the provinces where information was available, three provinces, British Columbia, Saskatchewan and New Brunswick, recorded a higher fatality rate than Alberta. However, only two provinces, Prince Edward Island and Newfoundland, recorded a lower rate of non-fatal injuries per 10,000 population.

* Not available at time of printing.

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PROVINCIAL TRAFFIC FATALITY RATES
Per 10,000 Population
1988

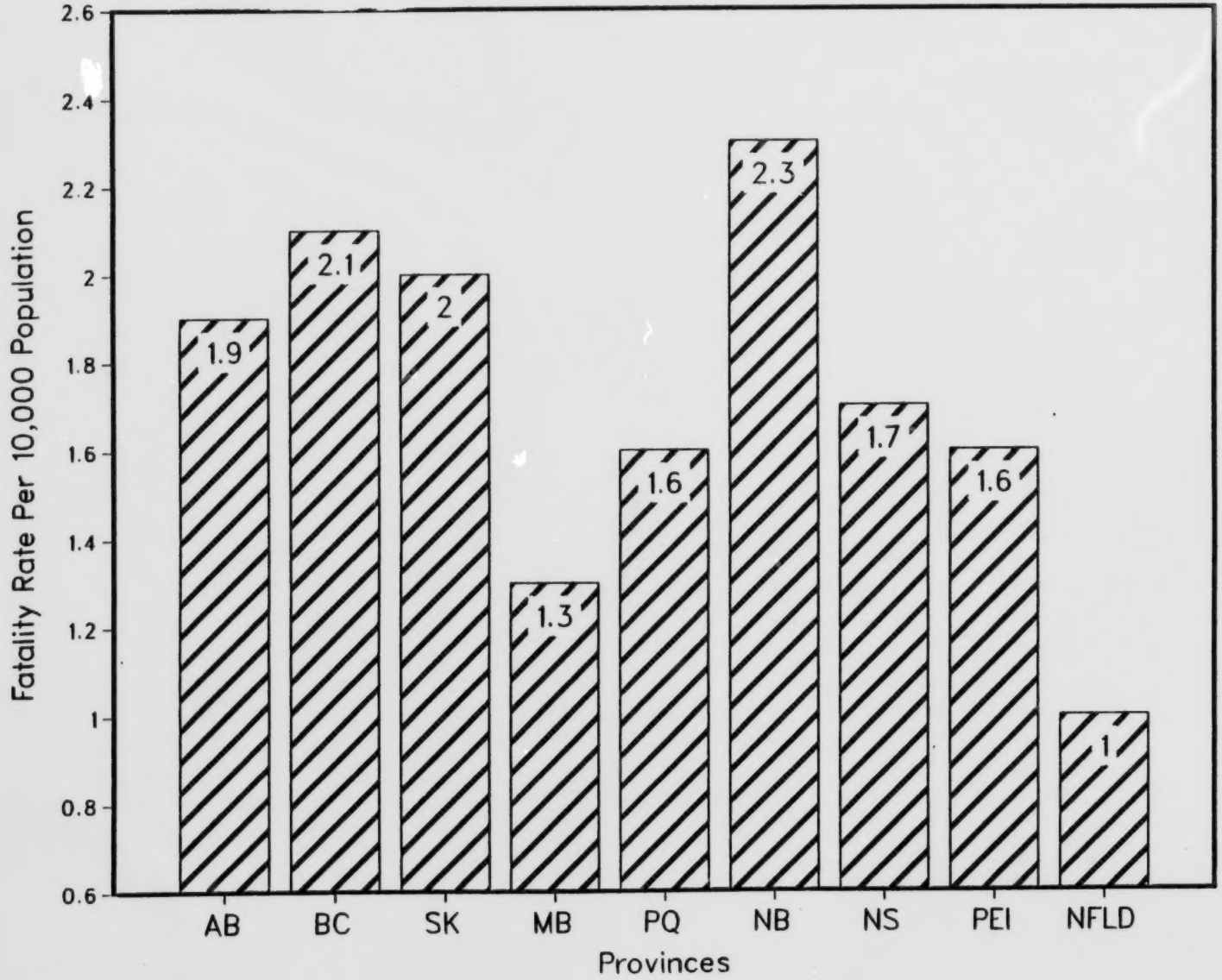


Figure 2

WHEN THE COLLISIONS OCCURRED

MONTH

- The months of June to October experienced more casualty collisions than other months. The highest number of property damage only collisions was recorded during the month of November.

DAY OF WEEK

- The daily distribution of collisions indicated that Friday was the most collision - prone day of the week. The largest number of fatal crashes occurred on Saturday.

TIME

- The afternoon rush hour period (3 p.m. - 6:59 p.m.) accounted for the highest proportion of collisions. The least collision - prone time period was the early morning (3 a.m. - 6:59 a.m.)

HOLIDAYS

- The Remembrance Day weekend recorded the greatest number of traffic collisions for a holiday period in 1988. The 1988 Easter long weekend recorded the highest total number of deaths.

Table 2.1

COLLISION OCCURRENCE BY MONTH

1988

Month	Fatal Collisions N	Fatal Collisions %	Non-Fatal Injury Collisions N	Non-Fatal Injury Collisions %	Property Damage Only Collisions N	Property Damage Only Collisions %	Total Collisions N	Total Collisions %
January	17	4.3	930	7.3	9234	9.5	10181	9.2
February	19	4.8	896	7.0	9214	9.5	10129	9.2
March	33	8.4	894	7.0	7849	8.1	8776	8.0
April	36	9.1	961	7.6	5956	6.1	6953	6.3
May	25	6.3	1048	8.2	6669	6.9	7742	7.0
June	31	7.8	1206	9.5	7924	8.2	9161	8.3
July	46	11.6	1253	9.8	7614	7.8	8913	8.1
August	45	11.4	1196	9.4	7810	8.0	9051	8.2
September	40	10.1	1158	9.1	7871	8.1	9069	8.2
October	41	10.4	1136	8.9	8107	8.3	9284	8.4
November	27	6.8	1020	8.0	9426	9.7	10473	9.5
December	35	8.9	1030	8.1	9400	9.7	10465	9.5
Unspecified	-	-	-	-	67	0.1	67	0.1
TOTAL Number of Collisions	**395**	**100.0**	**12728**	**100.0**	**97141**	**100.0**	**110264**	**100.0**

OBSERVATIONS

The months of July and August experienced the most fatal crashes, followed by the months of October and September. The months of June to October experienced more casualty collisions than any other period. The highest number of property damage only collisions was reported in the month of November.

Table 2.2

COLLISION OCCURRENCE BY

DAY OF WEEK

1988

Day of Week	Fatal Collisions N	Fatal Collisions %	Non-Fatal Injury Collisions N	Non-Fatal Injury Collisions %	Property Damage Only Collisions N	Property Damage Only Collisions %	Total Collisions N	Total Collisions %
Monday	39	9.9	1561	12.3	13600	14.0	15200	13.8
Tuesday	39	9.9	1720	13.5	14102	14.5	15861	14.4
Wednesday	56	14.2	1702	13.4	13685	14.1	15443	14.0
Thursday	53	13.4	1871	14.7	14508	14.9	16432	14.9
Friday	67	17.0	2205	17.3	16622	17.1	18894	17.1
Saturday	81	20.5	2093	16.4	14907	15.3	17081	15.5
Sunday	60	15.2	1576	12.4	9717	10.0	11353	10.3
TOTAL Number of Collisions	**395**	**100.0**	**12728**	**100.0**	**97141**	**100.0**	**110264**	**100.0**

OBSERVATIONS

The daily distribution of collisions indicated that overall Friday was the most collision-prone day of the week, followed by Saturday and Thursday. However, the largest number of fatal crashes occurred on Saturday.

Table 2.3

COLLISION OCCURRENCE BY

TIME PERIODS

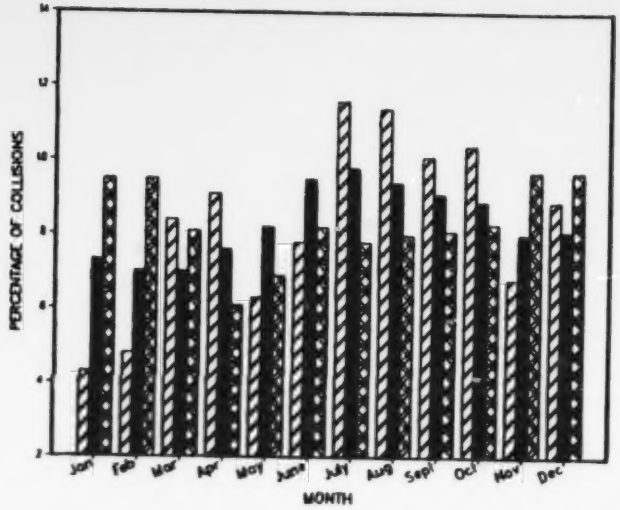
1988

Time Period	Fatal Collisions N	Fatal Collisions %	Non-Fatal Injury Collisions N	Non-Fatal Injury Collisions %	Property Damage Only Collisions N	Property Damage Only Collisions %	Total Collisions N	Total Collisions %
11:00 p.m. - 2:59 a.m.	63	15.9	1455	11.4	8640	8.9	10158	9.2
3:00 a.m. - 6:59 a.m.	50	12.7	823	6.5	3930	4.0	4803	4.4
7:00 a.m. - 10:59 a.m.	65	16.5	1913	15.0	16427	16.9	18405	16.7
11:00 a.m. - 2:59 p.m.	56	14.2	2553	20.1	23391	24.1	26000	23.6
3:00 p.m. - 6:59 p.m.	76	19.2	3558	28.0	26382	27.2	30016	27.2
7:00 p.m. - 10:59 p.m.	83	21.0	2208	17.3	16177	16.7	18468	16.7
Unspecified	2	0.5	218	1.7	2194	2.3	2414	2.2
TOTAL Number of Collisions	**395**	**100.0**	**12728**	**100.0**	**97141**	**100.0**	**110264**	**100.0**

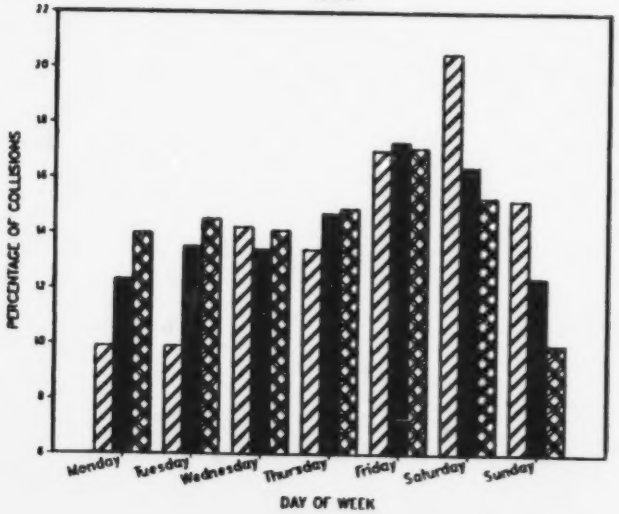
OBSERVATIONS

The afternoon rush hour period (3:00 p.m. - 6:59 p.m.) accounted for the largest percentage (27.2%) of collisions occurring in a 24 hour period. The least collision - prone time period was the early morning (3:00 a.m. - 6:59 a.m.).

COLLISION OCCURRENCE BY MONTH
1988



COLLISION OCCURRENCE BY
DAY OF WEEK
1988



COLLISION OCCURRENCE BY
TIME PERIODS
1988

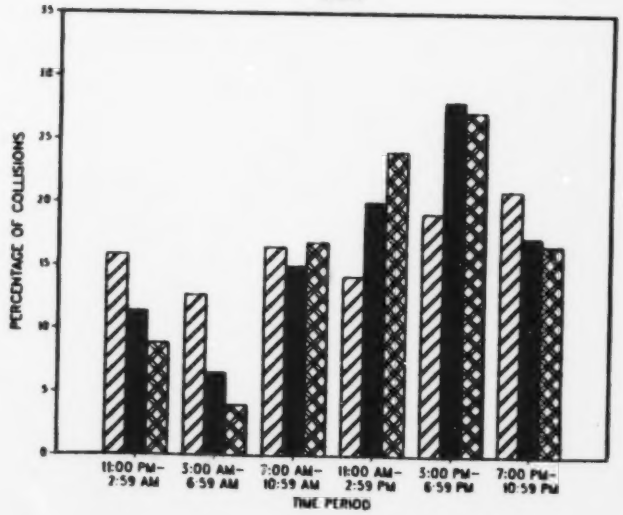


Figure 3

Table 2.4

COLLISIONS DURING 1988 HOLIDAYS

Holidays	Number Killed		Number Injured		TOTAL* COLLISIONS	
	N	%	N	%	N	%
New Year's Day (January 1)	1	2.3	26	1.4	292	3.2
Easter (March 31 - April 4)	10	23.3	202	10.7	1124	12.1
Victoria Day (May 20 - 23)	3	7.0	213	11.3	969	10.5
Canada Day (June 30 - July 3)	5	11.6	267	14.2	1088	11.8
August Long Weekend (July 29 - August 1)	6	14.0	308	16.3	1181	12.8
Labour Day (September 2 - 5)	4	9.3	259	13.7	1088	11.8
Thanksgiving (October 7 - 10)	2	4.7	225	11.9	1041	11.2
Remembrance Day (November 10 - 13)	4	9.3	217	11.5	1511	16.3
Christmas Season (December 23 - 26)	8	18.6	167	8.9	957	10.3
TOTAL	**43**	**100.0**	**1884**	**100.0**	**9251**	**100.0**

OBSERVATIONS

The five-day Easter weekend recorded the highest number of individuals killed. The Remembrance Day weekend recorded the highest number of total collisions.

* Includes fatal, injury and property damage only collisions.

VICTIMS

ROAD USER CLASS

- The majority of traffic victims were drivers and passengers of vehicles. Pedestrians and motorcyclists accounted for 6.3% and 4.6% of the total casualties, respectively.

AGE OF CASUALTIES

- Casualty rates per 10,000 population were highest for persons between the ages of 15 and 24. The lowest casualty rates were recorded for children 14 and under and people 65 years of age and over.

Table 3.1

INJURIES AND FATALITIES

BY ROAD USER CLASS

1988

Road User Class	Persons Killed		Persons Injured		Total Casualties	
	N	%	N	%	N	%
Drivers	238	51.3	9884	52.6	10122	52.6
Passengers	122	26.3	6124	32.6	6246	32.5
Pedestrians	50	10.8	1156	6.2	1206	6.3
Motorcyclists	31	6.7	853	4.5	884	4.6
Bicyclists	6	1.3	688	3.7	694	3.6
Other	11	2.4	52	0.3	63	0.3
Unspecified	6	1.3	20	0.1	26	0.1
TOTAL	**464**	**100.0**	**18777**	**100.0**	**19241**	**100.0**

OBSERVATIONS

The majority of traffic victims were drivers and passengers of vehicles. Pedestrians and motorcyclists accounted for 6.3% and 4.6% of the total casualties, respectively.

Table 3.2

AGE OF PERSONS INVOLVED

IN CASUALTY COLLISIONS

1988

Age in Years	Persons Killed N	Persons Killed %	Persons Injured N	Persons Injured %	Casualty Rate Per 10,000 Population*
Under 5	4	0.9	402	2.1	19.7
5 - 9	7	1.5	668	3.6	35.4
10 - 14	15	3.2	786	4.2	46.2
15 - 19	83	17.9	3438	18.3	194.7
20 - 24	85	18.3	3205	17.1	160.3
25 - 29	55	11.9	2395	12.8	99.5
30 - 34	36	7.8	1861	9.9	79.6
35 - 44	57	12.3	2420	12.9	70.9
45 - 54	35	7.5	1313	7.0	61.2
55 - 64	27	5.8	982	5.2	56.7
65 and over	60	12.9	946	5.0	48.6
Unspecified	-	-	361	1.9	
TOTAL	**464**	**100.0**	**18777**	**100.0**	

OBSERVATIONS

Casualty rates per 10,000 population were highest for persons between the ages of 15 and 24. The lowest casualty rates were recorded for children (14 years of age and younger) and people 65 and over.

* Based on estimates of the Alberta population by age groups and sex, June 1, 1988, Alberta Bureau of Statistics, February, 1989.

AGE OF CASUALTIES
CASUALTY RATE PER 10,000 POPULATION
1988

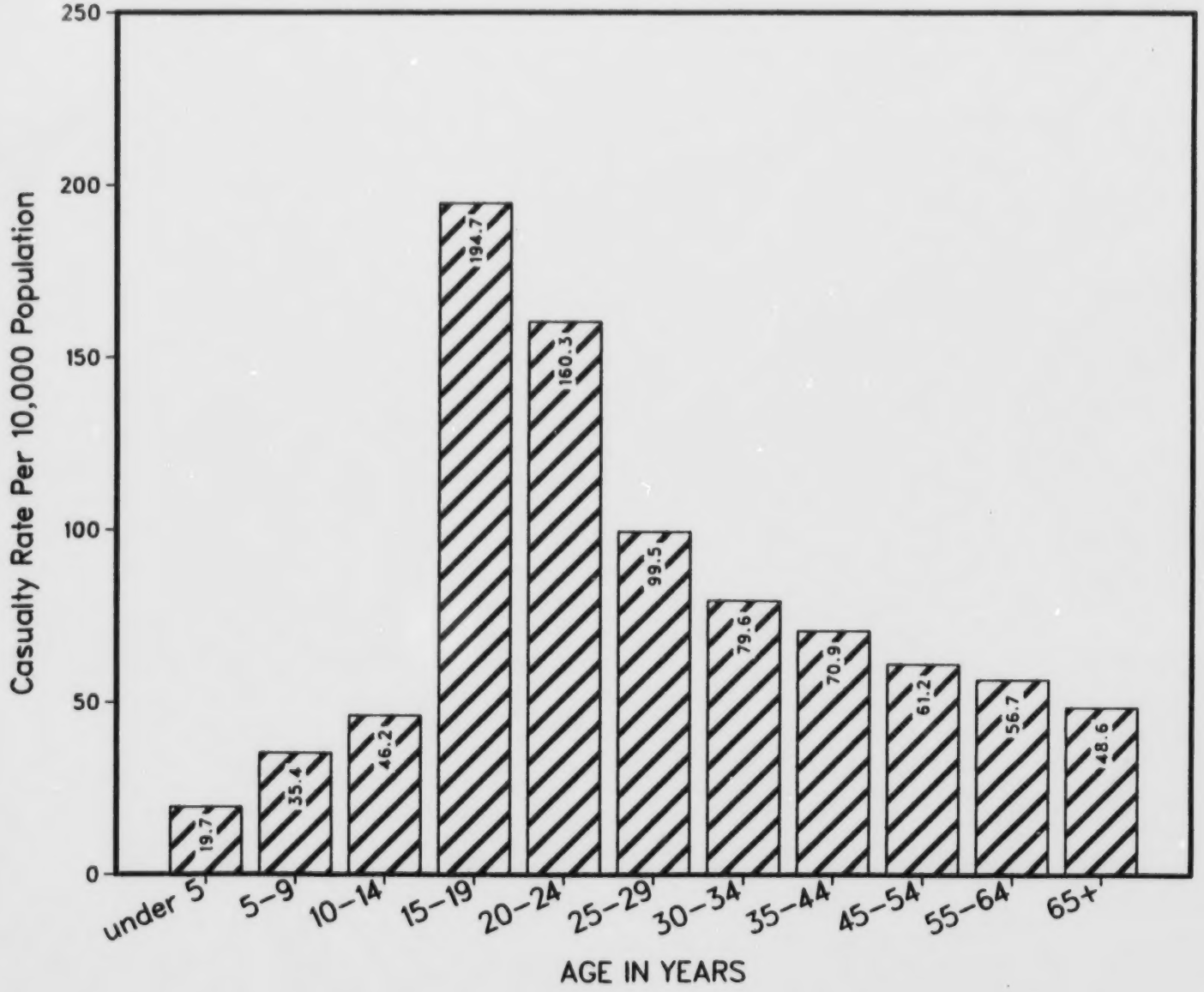


Figure 4

DRIVER COMPONENT

AGE AND SEX OF DRIVERS

- Collision rates per 1000 licensed drivers indicated that 18-19 year olds were more likely to be involved in a casualty collision than any other age group. The next age group most likely to be involved were 16 to 17 year olds.

DRIVER ACTIONS

- Driver error or misjudgement was involved in approximately 54.3% of casualty collisions. Running off the road, failing to observe a traffic control device and travelling at an unsafe speed were the most frequent driver actions contributing to casualty collisions.

Table 4.1

AGE AND SEX OF DRIVERS INVOLVED IN CASUALTY COLLISIONS: PER 1,000 LICENSED DRIVERS

1988

	MALES			FEMALES			TOTAL*		
Age of Driver	N	%	Per 1000** Licensed Drivers	N	%	Per 1000** Licensed Drivers	N	%	Per 1000** Licensed Drivers
Under 16	343	1.6	21.6	120	0.6	10.3	465	2.1	16.9
16 - 17	898	4.1	29.3	437	2.0	17.3	1341	6.2	23.9
18 - 19	1269	5.8	33.1	499	2.3	14.8	1769	8.1	24.6
20 - 24	2642	12.1	23.9	1160	5.3	11.6	3809	17.5	18.1
25 - 34	4161	19.1	14.2	1827	8.4	7.1	6000	27.6	10.9
35 - 44	2364	10.9	11.3	1221	5.6	6.7	3592	16.5	9.2
45 - 54	1312	6.0	10.6	600	2.8	5.9	1917	8.8	8.5
55 - 64	959	4.4	10.2	366	1.7	5.4	1327	6.1	8.2
65 and over	775	3.6	10.3	258	1.2	5.5	1035	4.8	8.5
Unspecified	126	0.6		52	0.2		499	2.3	
TOTAL Number of Drivers	14849	68.2		6540	30.1		21754	100.0	

OBSERVATIONS

Collision rates per 1000 licensed drivers indicated that 18-19 year olds were more likely to be involved in a casualty collision than any other age group. The next age group most likely to be involved in casualty crashes was 16 to 17 year olds.

* Total includes drivers whose sex was not specified on the collision report form.

** Source: Alberta Solicitor General - Motor Vehicles Division. Operator Statistics, December 31, 1988.

AGE AND SEX OF DRIVERS INVOLVED IN
CASUALTY COLLISIONS
COLLISION RATE PER 1000 LICENSED DRIVERS
1988

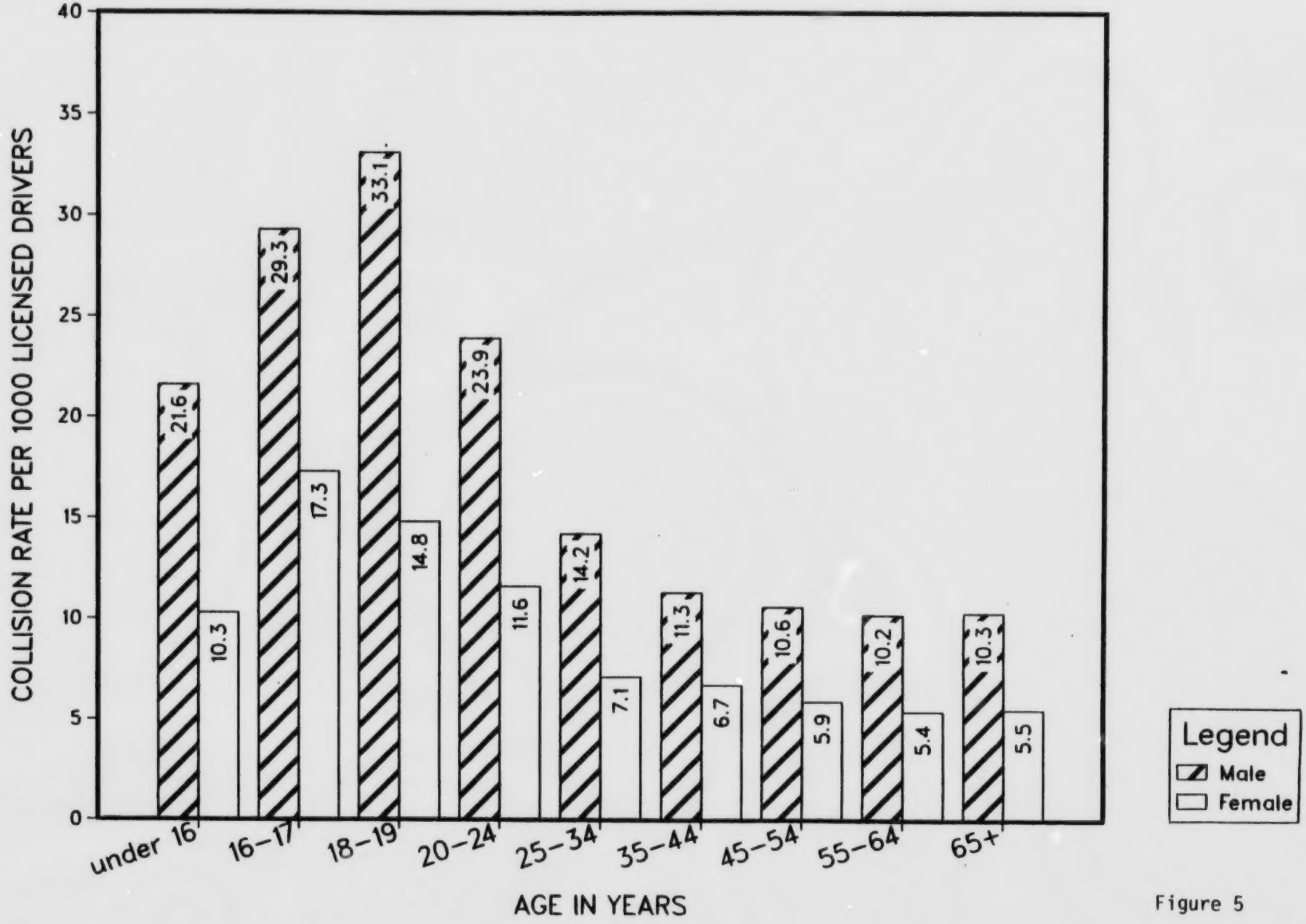


Figure 5

Table 4.2

ACTIONS OF DRIVERS INVOLVED IN CASUALTY COLLISIONS*

1988

Driver Action	Drivers in Fatal Collisions		Drivers in Non-Fatal Injury Collisions		Total Drivers in Casualty Collisions	
	N	%	N	%	N	%
Driving Properly	216	36.5	8992	46.0	9208	45.7
Ran Off Road	88	14.9	1412	7.2	1500	7.4
Failed to Observe Traffic Control Device	38	6.4	1270	6.5	1308	6.5
Unsafe Speed	66	11.2	1141	5.8	1207	6.0
Followed Too Closely	4	0.7	1093	5.6	1097	5.4
Failed to Yield Right-of-Way	27	4.6	987	5.0	1014	5.0
Left Turn Across Path	18	3.0	975	5.0	993	4.9
Entered Lane When Unsafe	6	1.0	364	1.9	370	1.8
Left of Centre	63	10.7	269	1.4	332	1.6
Improper Turn	2	0.3	305	1.6	307	1.5
Improper Passing	10	1.7	157	0.8	167	0.8
Backed Unsafely	1	0.2	134	0.7	135	0.7
Failed to Signal	-	-	25	0.1	25	0.1
Other	52	8.8	2432	12.4	2484	12.3
TOTAL Number of Drivers	**591**	**100.0**	**19556**	**100.0**	**20147**	**100.0**

OBSERVATIONS

Driver error or misjudgement was involved in 54.3% of casualty collisions. Running off the road, failing to observe traffic control device, and travelling at an unsafe speed were the most frequently identified driver actions contributing to casualty collisions.

* Includes only those cases where driver action was specified on the collision report form. Driver action was unspecified for 26 drivers involved in fatal collisions and 1581 drivers in non-fatal injury collisions.

VEHICLE COMPONENT

TYPES OF VEHICLES

- Passenger cars and pick up trucks/vans were the vehicles most frequently involved in total casualty collisions. Motorcycles were involved in 3.7% of casualty collisions and bicycles were involved in 3.2% of casualty collisions.

VEHICULAR FACTORS

- Vehicle defects played a minor role in casualty collisions. Less than 3% of vehicles involved in casualty collisions were identified as having a vehicle defect. The most common defects involved tire failure and defective brakes.

POINT OF IMPACT

- The most common point of impact in casualty collisions involved the front of the vehicle. Approximately 38% of the impacts involved the centre front.

Table 5.1

TYPES OF VEHICLES INVOLVED IN CASUALTY COLLISIONS

1988

Type of Vehicle	Vehicles in Fatal Collisions		Vehicles in Non-Fatal Injury Collisions		Total Vehicles in Casualty Collisions	
	N	%	N	%	N	%
Passenger Car	262	41.8	13423	62.8	13685	62.2
Pick Up Truck/Van	245	39.1	5365	25.1	5610	25.5
Motorcycle	31	4.9	774	3.6	805	3.7
Bicycle	6	1.0	696	3.3	702	3.2
Truck 4000 Kg+	25	4.0	489	2.3	514	2.3
Tractor - Trailer	41	6.5	392	1.8	433	2.0
Other Bus	2	0.3	100	0.5	102	0.5
Off Hwy. Vehicle	8	1.3	38	0.2	46	0.2
School Bus	2	0.3	25	0.1	27	0.1
Farm Equipment	2	0.3	22	0.1	24	0.1
Other	3	0.5	45	0.2	48	0.2
Unspecified	-	-	14	0.1	14	0.1
TOTAL Number of Vehicles	**627**	**100.0**	**21383**	**100.0**	**22010**	**100.0**

OBSERVATIONS

Passenger cars and pick up trucks/vans were the vehicles most frequently involved in total casualty collisions. Overall, motorcycles were involved in 3.7% and bicycles in 3.2% of casualty collisions. Tractor-trailers were involved in 2.0% of total casualty crashes, but in 6.5% of fatal crashes.

Table 5.2

VEHICULAR FACTORS

INVOLVED IN CASUALTY COLLISIONS*

1988

Vehicular Factors	Vehicles in Fatal Collisions		Vehicles in Non-Fatal Injury Collisions		Total Vehicles in Casualty Collisions	
	N	%	N	%	N	%
No Defect Present	460	97.7	18339	97.8	18799	97.8
Tire Failure/Inadequate	1	0.2	105	0.6	106	0.5
Defective Brakes	4	0.8	87	0.5	91	0.5
Lighting Defect	-	-	61	0.3	61	0.3
Other	6	1.3	161	0.9	167	0.9
TOTAL Number of Vehicles	**471**	**100.0**	**18753**	**100.0**	**19224**	**100.0**

OBSERVATIONS

Vehicle defects played a minor role in casualty collisions. Less than 3% of vehicles involved in these types of collisions were identified as having a vehicle defect. The most common defects included tire failure and defective brakes.

* Includes only those cases in which a vehicular factor was specified on the collision report form. Vehicle factors were unspecified for 156 vehicles in fatal collisions and 2630 vehicles in non-fatal injury collisions.

Table 5.3

POINT OF IMPACT

ON VEHICLES INVOLVED IN

CASUALTY COLLISIONS*

1988

Point of Impact	Vehicles in Fatal Collisions		Vehicles in Non-Fatal Injury Collisions		Total Vehicles in Casualty Collisions	
	N	%	N	%	N	%
Centre Front	253	41.5	7692	38.3	7945	38.4
Right Front	50	8.2	2112	10.5	2162	10.4
Left Front	49	8.0	2043	10.2	2092	10.1
Right Side	44	7.2	1139	5.7	1183	5.7
Left Side	40	6.6	1163	5.8	1203	5.8
Centre Rear	15	2.5	2676	13.3	2691	13.0
Right Rear	16	2.6	648	3.2	664	3.2
Left Rear	15	2.5	588	2.9	603	2.9
Top	4	0.7	54	0.3	58	0.3
Undercarriage	3	0.5	153	0.8	156	0.8
Rollover	120	19.7	1830	9.1	1950	9.4
TOTAL Number of Vehicles	**609**	**100.0**	**20098**	**100.0**	**20707**	**100.0**

OBSERVATIONS

The most common point of impact in casualty collisions involved the front of the vehicle. Approximately 38% of the impacts involved the centre front, while 13.0% of the impacts involved the centre rear and 10.4% involved the right front.

* Includes only those cases in which point of impact was specified on the collision report form. Point of impact was unspecified for 18 vehicles in fatal collisions and 1285 vehicles in non-fatal injury collisions.

ENVIRONMENTAL COMPONENT

LOCATION

- The majority of fatal crashes occurred in rural areas, whereas the majority of injury and property damage only crashes occurred in urban areas.

SURFACE CONDITION

- The majority (60.5%) of the casualty collisions occurred when surface conditions were dry. Snow/ice were present in 15.2% of the casualty crashes.

ROAD LOCATION

- Approximately 46.7% of casualty collisions were intersection-related. However, fatal collisions were more likely to be non-intersection related (64.8%).

Table 6.1

LOCATION OF COLLISIONS

1988

	Fatal Collisions		Non-Fatal Injury Collisions		Property Damage Only Collisions		Total Collisions	
Location	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Urban	123	31.1	8940	70.2	80525	82.9	89588	81.2
Rural	272	68.9	3788	29.8	16616	17.1	20676	18.8
TOTAL Number of Collisions	**395**	**100.0**	**12728**	**100.0**	**97141**	**100.0**	**110264**	**100.0**

OBSERVATIONS

Collisions which occurred in rural areas accounted for 68.9% of all fatal crashes. Collisions occurring in urban areas resulted in the highest proportion of non-fatal injury collisions (70.2%) and property damage only crashes (82.9%).

Table 6.2

CASUALTY COLLISION OCCURRENCE

BY SURFACE CONDITION

1988

Surface Condition	Fatal Collisions N	Fatal Collisions %	Non-Fatal Injury Collisions N	Non-Fatal Injury Collisions %	Total Casualty Collisions N	Total Casualty Collisions %
Dry	263	66.6	7673	60.3	7936	60.5
Snowy/Icy	53	13.4	1941	15.2	1994	15.2
Wet	31	7.8	1244	9.8	1275	9.7
Loose Material	38	9.6	714	5.6	752	5.7
Other	-	-	47	0.4	47	0.4
Unspecified	10	2.5	1109	8.7	1119	8.5
TOTAL Number of Collisions	**395**	**100.0**	**12728**	**100.0**	**13123**	**100.0**

OBSERVATIONS

The majority of casualty collisions occurred when surface conditions were dry. Snow and ice were involved in 13.4% of fatal collisions and 15.2% of non-fatal injury collisions.

Table 6.3

ROAD LOCATION OF CASUALTY COLLISIONS

1988

Road Location	Fatal Collisions N	Fatal Collisions %	Non-Fatal Injury Collisions N	Non-Fatal Injury Collisions %	Total Casualty Collisions N	Total Casualty Collisions %
Intersection-Related	103	26.1	6024	47.4	6127	46.7
Non-Intersection Related	256	64.8	5500	43.2	5756	43.9
At/Near Entrance to Private Property	19	4.8	423	3.3	442	3.4
Parking Lot	-	-	284	2.2	284	2.2
At/Near Commercial Entrance	2	0.5	251	2.0	253	1.9
Off Highway	1	0.3	51	0.4	52	0.4
At/Near Service Road	5	1.3	104	0.8	109	0.8
At/Near Railroad Crossing	9	2.3	66	0.5	75	0.6
Unspecified	-	-	17	0.1	17	0.1
TOTAL Number of Collisions	**395**	**100.0**	**12720**	**100.0**	**13115**	**100.0**

OBSERVATIONS

46.7% of casualty collisions were intersection-related. Fatal collisions were more likely to be non-intersection related (64.8%).

SPECIAL TYPES OF VEHICLES

MOTORCYCLES

- The injury motorcycle collision rate based on motorcycle registrations decreased from 1987, while the fatal motorcycle collision rate increased.

- The majority of motorcycle casualty collisions involved male drivers. Motorcycle drivers under the age of 25 were the age group most likely to be involved in these collisions. In particular 16 and 17 year old motorcycle drivers had an involvement rate per 1,000 licenced drivers of 64.1, a rate over four times greater than that of the 20-24 year old motorcycle drivers.

- Compared to drivers involved in all types of vehicle collisions, motorcycle drivers were less likely to fail to yield right-of-way, to fail to observe a traffic control device, or make a left turn across the path of an oncoming vehicle. However, motorcycle drivers were more likely to drive at an unsafe speed or pass improperly.

- Compared to drivers involved in all types of vehicle casualty collisions, motorcycle drivers were more likely to have consumed alcohol before the crash.

- Vehicular factors were involved in 4.0% of motorcycle casualty collisions compared to 2.2% of casualty collisions involving all types of vehicles.

- The majority of casualty collisions involving motorcycles occurred on dry roads.

TRACTOR - TRAILERS

- In 1988, there were 52 persons killed and 569 injured in collisions involving tractor-trailers. This represents an increase in casualties over 1987.

- Compared to drivers of other vehicles, tractor-trailer drivers were more likely to run off the road.

- Tractor-trailer drivers were less likely to consume alcohol before the crash than were drivers of other types of collision - involved vehicles.

- Vehicular factors were more likely to be present in tractor-trailer casualty collisions than in casualty collisions involving other types of vehicles.

- The occurrence of casualty collisions involving tractor-trailers was highest in the months of January and August.

TRAINS

- In 1988, 11 people were killed and 43 people were injured in crashes in which a train was involved. The number of casualties involving trains has increased from 1987.

- The majority of injury collisions involving trains occurred in the month of August. The majority of fatal collisions involving trains occurred in the month of December.

- A large percentage of drivers involved in a collision with a train either failed to observe the traffic control device (56.4%) or failed to yield right-of-way to the train (17.9%).

Table 7.1

CASUALTY COLLISIONS INVOLVING MOTORCYCLES

1984 - 1988

	1988	1987	1986	1985	1984
Number of Motorcycles					
Fatal	31	31	33	33	26
Non-Fatal Injury	774	861	989	896	873
TOTAL Number of Motorcycles	**805**	**892**	**1022**	**929**	**899**
Casualties*					
Number Killed	31	32	33	32	27
Number Injured	925	1029	1156	1099	1030
TOTAL Casualties	**956**	**1061**	**1189**	**1131**	**1057**
Number of Motorcycles Involved in Casualty Collisions Per 10,000 Registered Motorcycles**					
Fatal Collisions	7.3	6.8	7.1	5.5	4.4
Non-Fatal Injury Collisions	182.2	190.0	212.7	150.2	147.9

OBSERVATIONS

Motorcycle involvement in injury collisions, based on motorcycle registrations decreased in 1988, while fatal collision involvement increased.

* This refers to the number of people killed and injured in collisions in which a motorcycle was involved. It does not refer to the number of motorcyclists killed and injured.

** Source: Based on vehicle registration statistics, Motor Vehicles Division, Alberta Solicitor General, March 31, 1988.

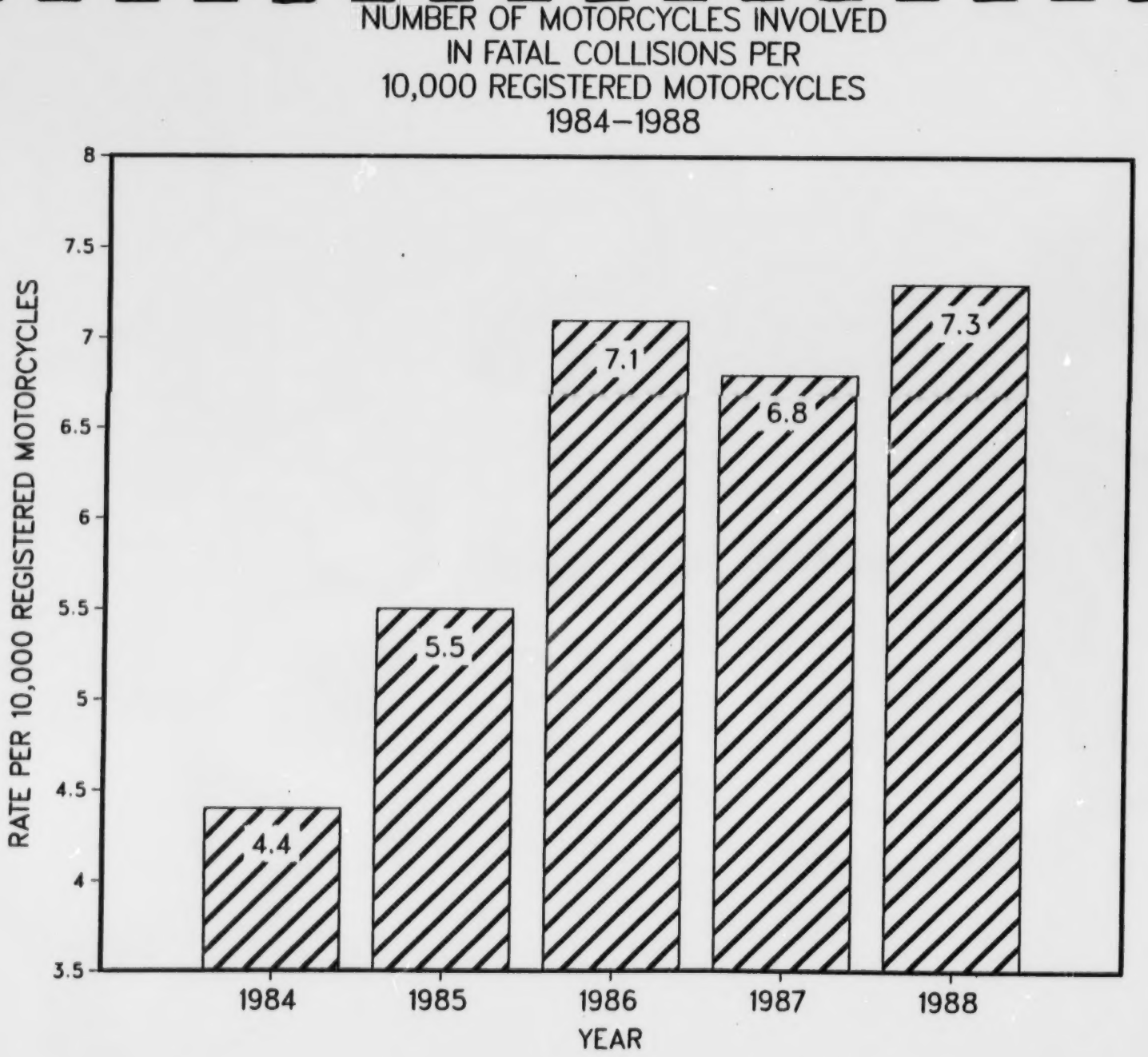

NUMBER OF MOTORCYCLES INVOLVED
IN FATAL COLLISIONS PER
10,000 REGISTERED MOTORCYCLES
1984–1988
RATE PER 10,000 REGISTERED MOTORCYCLES
8
7.5
7
6.5
6
5.5
5
4.5
4
3.5
4.4
5.5
7.1
6.8
7.3
1984
1985
1986
1987
1988
YEAR

Figure 6

Table 7.2

CASUALTY COLLISIONS INVOLVING MOTORCYCLES:

AGE AND SEX OF MOTORCYCLE DRIVER

1988

	Male		Female		Total*		Per 1,000 Licensed Motorcycle Operators**
Age of Driver	N	%	N	%	N	%	%
Under 16	21	2.6	4	0.5	25	3.1	-
16 - 17	39	4.8	5	0.6	44	5.5	64.1
18 - 19	98	12.2	7	0.9	105	13.0	43.1
20 - 24	177	22.0	20	2.5	197	24.5	13.1
25 - 34	188	23.4	26	3.2	215	26.7	3.2
35 - 44	82	10.2	23	2.9	106	13.2	2.4
45 - 54	32	4.0	18	2.2	51	6.3	3.7
55 - 64	15	1.9	5	0.6	20	2.5	3.1
65 and over	16	2.0	8	1.0	24	3.0	12.5
Unspecified	4	0.5	-	-	18	2.2	
TOTAL Number of Motorcycle Drivers	**672**	**83.5**	**116**	**14.4**	**805**	**100.0**	

OBSERVATIONS

The majority of motorcycle casualty collisions involved male drivers. Motorcycle drivers under the age of 25 were the age group most likely to be involved in collisions. In particular, 16 and 17 year old motorcycle drivers had a high involvement rate. The age group least likely to be involved in collisions were drivers 55-64 years of age. **These age and sex comparisons are limited due to the lack of driving exposure data.** That is, in order to make valid age comparisons, it is important to take into account the number of kilometres driven annually by each age and sex group of motorcycle operators.

* Total includes drivers whose sex was not specified on the collision report form.

** Source: Alberta Solicitor General - Motor Vehicles Division. Operator Statistics, December 31, 1988.

Table 7.3

CASUALTY COLLISIONS

INVOLVING MOTORCYCLES:

ACTION OF MOTORCYCLE DRIVER*

1988

Driver Action	N	%	Driver Action in Total Casualty Collisions (All Vehicle Types) %
Driving Properly	324	44.4	45.7
Unsafe Speed	150	20.5	6.0
Ran Off Road	40	5.5	7.4
Followed Too Closely	31	4.2	5.4
Failed to Observe Traffic Control Device	25	3.4	6.5
Improper Passing	18	2.5	0.8
Failed to Yield Right-of-Way	15	2.1	5.0
Improper Turn	9	1.2	1.5
Left of Centre	7	1.0	1.6
Left Turn Across Path	6	0.8	4.9
Entered Lane When Unsafe	6	0.8	1.8
Failed to Signal	1	0.1	0.1
Other	98	13.4	12.3
TOTAL Number of Motorcycle Drivers	**730**	**100.0**	

OBSERVATIONS

Improper driver actions were a contributory factor for 55.6% of the motorcyclists involved in casualty collisions. Compared to drivers involved in other types of vehicle casualty collisions, motorcycle drivers were more likely to drive at an unsafe speed, or pass improperly. However, motorcycle drivers were less likely to fail to yield right-of-way, to fail to observe a traffic control device, or make a left turn across the path of an oncoming vehicle.

* Based only on cases where driver action was specified on the collision report form. A driver action was unspecified in 75 cases.

Table 7.4

CASUALTY COLLISIONS

INVOLVING MOTORCYCLES:

CONDITION OF MOTORCYCLE DRIVER*

1988

Driver Condition	N	%	Driver Condition in Total Casualty Collisions (All Vehicle Types) %
Normal	583	81.5	86.5
Had Been Drinking	92	12.9	7.0
Alcohol Impaired	36	5.0	4.8
Other	4	0.6	1.7
TOTAL Number of Motorcycle Drivers	**715**	**100.0**	

OBSERVATIONS

The motorcycle driver's condition was a contributory factor for 18.5% of these crashes. Compared to drivers involved in other types of vehicle casualty collisions, motorcycle drivers were more likely to have consumed alcohol prior to the crash.

* Based only on cases where driver condition was specified on the collision report form. Driver condition was unspecified in 90 cases.

Table 7.5
CASUALTY COLLISIONS
INVOLVING MOTORCYCLES:
VEHICULAR FACTORS*
1988

Vehicular Factors	N	%	Vehicular Factors in Total Casualty Collisions (All Vehicle Types) %
No Defect Present	680	96.0	97.8
Tire Failure/Inadequate	10	1.4	0.5
Lighting Defect	4	0.6	0.3
Defective Brakes	4	0.6	0.5
Other	10	1.4	0.9
TOTAL Number of Motorcycles	**708**	**100.0**	

OBSERVATIONS

Vehicular factors were involved in 4.0% of motorcycle casualty collisions, compared to 2.2% in casualty collisions involving other types of vehicles. In particular, motorcycles were twice as likely as other vehicle types to experience tire failure or lighting defects.

* Based only on cases where a vehicular factor was specified on the collision report form. A vehicular factor was unspecified in 97 cases.

Table 7.6
CASUALTY COLLISIONS
INVOLVING MOTORCYCLES:
MONTH OF OCCURRENCE
1988

Month	N	%
January	2	0.2
February	6	0.8
March	26	3.3
April	105	13.2
May	123	15.5
June	134	16.9
July	138	17.4
August	109	13.7
September	80	10.1
October	60	7.6
November	7	0.9
December	4	0.5
TOTAL Number of Collisions	**794**	**100.0**

OBSERVATIONS

The months of April to August recorded the highest proportion of casualty crashes involving motorcycles.

Table 7.7

CASUALTY COLLISIONS

INVOLVING MOTORCYCLES:

ROAD SURFACE CONDITION*

1988

Road Surface Condition	N	%
Dry	627	86.8
Loose Material	48	6.6
Wet	38	5.3
Snowy/Icy	2	0.3
Other	7	1.0
TOTAL Number of Collisions	722	100.0

OBSERVATIONS

The majority of casualty collisions involving motorcycles occurred on dry roads. However, 5.3% of the collisions occurred on wet road surfaces. Loose material on the road surface was involved in 6.6% of motorcycle casualty crashes.

* Based only on collisions where road surface condition was specified on the collision report form. Road condition was unspecified in 72 cases.

Table 7.8

CASUALTY COLLISIONS INVOLVING TRACTOR-TRAILERS

1984-1988

Number of Tractor-Trailers	1988	1987	1986	1985	1984
	N	N	N	N	N
Fatal	41	55	53	63	47
Non-Fatal Injury	392	359	425	433	422
TOTAL Number of Tractor-Trailers	**433**	**414**	**478**	**496**	**469**
Casualties*					
Number Killed	52	63	65	86	54
Number Injured	569	529	607	646	646
TOTAL Casualties	**621**	**592**	**672**	**732**	**700**

OBSERVATIONS

In 1988, there were 52 persons killed and 569 injured in collisions involving tractor-trailers. This represents an increase in casualties from 1987. The total number of tractor-trailers involved in casualty crashes also increased in 1988, standing at 433 compared to the five-year high of 496 recorded in 1985.

* This refers to the number of people killed and injured in collisions in which a tractor-trailer was involved. It does not refer to the number of tractor-trailer drivers killed and injured.

Table 7.9

CASUALTY COLLISIONS

INVOLVING TRACTOR-TRAILERS:

DRIVER ACTION*

1988

Driver Action	N	%	Driver Action in Total Casualty Collisions (All Vehicle Types) %
Driving Properly	237	60.6	45.7
Ran Off Road	50	12.8	7.4
Followed Too Closely	20	5.1	5.4
Unsafe Speed	13	3.3	6.0
Failed to Observe Traffic Control Device	11	2.8	6.5
Improper Turn	7	1.8	1.5
Left Turn Across Path	5	1.3	4.9
Failed to Yield Right-of-Way	4	1.0	5.0
Improper Passing	3	0.8	0.8
Left of Centre	3	0.8	1.6
Entered Lane When Unsafe	2	0.5	1.8
Backed Unsafely	2	0.5	0.7
Other	34	8.7	12.3
TOTAL Number of Drivers	**391**	**100.0**	

OBSERVATIONS

Improper driver actions were exhibited by approximately 39% of the tractor-trailer drivers involved in casualty collisions. Compared to drivers of other vehicles, tractor-trailer drivers were more likely to run off the road. However, operators of tractor-trailers were less likely than other vehicle operators to fail to observe a traffic control device, drive at an unsafe speed, fail to yield the right-of-way, or make an unsafe left turn.

* Based only on those cases where driver action was specified on the collision report form. Driver action was unspecified in 21 cases.

Table 7.10

CASUALTY COLLISIONS

INVOLVING TRACTOR-TRAILERS:

DRIVER CONDITION*

1988

Driver Condition	N	%	Driver Condition in Total Casualty Collisions (All Vehicle Types) %
Normal	368	95.8	86.5
Had Been Drinking	4	1.0	7.0
Alcohol Impaired	2	0.5	4.8
Other	10	2.6	1.7
TOTAL Number of Drivers	**384**	**100.0**	

OBSERVATIONS

The condition of the tractor-trailer driver was a contributory factor for only 4.1% of the drivers involved. Tractor-trailer drivers were less likely to consume alcohol before the crash than were drivers of other types of collision-involved vehicles.

* Based only on cases where driver condition was specified on the collision report form. Driver condition was unspecified in 28 cases.

Table 7.11

CASUALTY COLLISIONS

INVOLVING TRACTOR-TRAILERS:

VEHICULAR FACTORS*

1988

Vehicular Factors	N	%	Vehicular Factors in Total Casualty Collisions (All Vehicle Types) %
No Defect Present	358	94.7	97.8
Tire Failure/Inadequate	5	1.3	0.5
Defective Brakes	4	1.1	0.5
Lighting Defect	2	0.5	0.3
Other	9	2.4	0.9
TOTAL Number of Tractor-Trailers	**378**	**100.0**	

OBSERVATIONS

Vehicular factors were involved in 5.3% of tractor-trailer casualty collisions. Vehicular factors were more likely to be present in tractor-trailer collisions than in collisions involving other types of vehicles.

* Based only on those cases where vehicular factor was specified on the collison report form. Vehicular factors were unspecified in 55 cases.

Table 7.12
CASUALTY COLLISIONS
INVOLVING TRACTOR-TRAILERS:
MONTH OF OCCURRENCE
1988

Month	N	%
January	50	11.9
February	36	8.6
March	24	5.7
April	25	6.0
May	21	5.0
June	27	6.4
July	37	8.8
August	47	11.2
September	37	8.8
October	42	10.0
November	35	8.3
December	39	9.3
TOTAL Number of Collisions	**420**	**100.0**

OBSERVATIONS

The occurrence of casualty collisions involving tractor-trailers was highest in the months of January and August. The lowest number of tractor-trailer casualty collisions occurred during March and May.

Table 7.13
CASUALTY COLLISIONS INVOLVING TRAINS
1984-1988

Number of Trains	1988	1987	1986	1985	1984
	N	N	N	N	N
Fatal	8	4	3	5	4
Non-Fatal Injury	31	31	22	30	33
TOTAL Number of Trains	**39**	**35**	**25**	**35**	**37**
Casualties*					
Number Killed	11	4	3	6	4
Number Injured	43	42	30	41	44
TOTAL Casualties	**54**	**46**	**33**	**47**	**48**

OBSERVATIONS

The number of trains involved in casualty collisions increased from 1987. The number of casualties involved in these collisions has also increased since 1987.

* This refers to the total number of people killed and injured in collisions in which a train was involved.

Table 7.14

CASUALTY COLLISIONS INVOLVING TRAINS:

MONTH OF OCCURRENCE

1988

Month	Fatal Collisions N	Fatal Collisions %	Non-Fatal Injury Collisions N	Non-Fatal Injury Collisions %	Total Casualty Collisions N	Total Casualty Collisions %
January	0	0.0	3	9.7	3	7.7
February	1	12.5	2	6.5	3	7.7
March	0	0.0	3	9.7	3	7.7
April	0	0.0	2	6.5	2	5.1
May	2	25.0	1	3.2	3	7.7
June	0	0.0	2	6.5	2	5.1
July	0	0.0	3	9.7	3	7.7
August	0	0.0	6	19.4	6	15.4
September	2	25.0	1	3.2	3	7.7
October	0	0.0	4	12.9	4	10.3
November	0	0.0	3	9.7	3	7.7
December	3	37.5	1	3.2	4	10.3
TOTAL Number of Collisions	**8**	**100.0**	**31**	**100.0**	**39**	**100.0**

OBSERVATIONS

The largest number of injury collisions involving trains occurred in the month of August. However, the largest number of fatal crashes occurred in December.

Table 7.15

CASUALTY COLLISIONS INVOLVING TRAINS:

DRIVER ACTION*

1988

Driver Action	Drivers in Fatal Collisions		Drivers in Non-Fatal Injury Collisions		Total Drivers in Casualty Collisions	
	N	%	N	%	N	%
Failed to Observe Traffic Control Device	6	75.0	16	51.6	22	56.4
Failed to Yield Right-of-Way	2	25.0	5	16.1	7	17.9
Unsafe Speed	-	-	3	9.7	3	7.7
Backed Unsafely	-	-	1	3.2	1	2.6
Other	-	-	4	12.9	4	10.3
Unspecified	-	-	2	6.5	2	5.1
TOTAL Number of Drivers	**8**	**100.0**	**31**	**100.0**	**39**	**100.0**

OBSERVATIONS

A large percentage of drivers involved in collision with a train either failed to observe the traffic control device (56.4%) or failed to yield right-of-way to the train (17.9%).

PEDESTRIANS AND BICYCLISTS

PEDESTRIANS

- Pedestrian casualty collisions were fairly evenly distributed across all months of the year. September to December accounted for the largest number of collisions, while August experienced the least number of pedestrian crashes.

- Pedestrian casualty collisions were most likely to occur on Thursdays and Fridays and least likely to occur on Sundays.

- Pedestrian casualty collisions were most likely to occur during the evening rush-hour period.

- Drivers failed to yield the right-of-way to pedestrians in 23.3% of the collisions.

- The casualty rate per population was highest for pedestrians between the ages of 5 and 19.

BICYCLISTS

- Casualty collisions involving bicycles were more likely to occur between the months of May and August.

- Wednesdays and Fridays experienced the most casualty collisions involving bicycles. As well, the largest number of these crashes (39.9%) occurred during the evening rush-hour period.

- The majority of bicycle casualty crashes involved young bicyclists, 10-19 years of age.

- The action of the bicyclist involved contributed to nearly 66% of these casualty crashes. The most commonly cited bicyclist actions were failing to yield the right-of-way, failing to observe a traffic control device, and entering a lane when unsafe.

Table 8.1

CASUALTY COLLISIONS INVOLVING PEDESTRIANS:

MONTH OF OCCURRENCE

1988

Month of Collision	N	%
January	86	7.5
February	102	8.9
March	91	7.9
April	81	7.0
May	82	7.1
June	100	8.7
July	90	7.8
August	74	6.4
September	113	9.8
October	113	9.8
November	109	9.5
December	109	9.5
Unspecified	-	-
TOTAL Number of Collisions	1150	100.0

OBSERVATIONS

Pedestrian casualty collisions were fairly evenly distributed across all months of the year. September to December accounted for the largest number of collisions, while August experienced the least number of pedestrian crashes.

Table 8.2

CASUALTY COLLISIONS INVOLVING PEDESTRIANS: DAY OF OCCURRENCE

1988

Day of Week	N	%
Monday	135	11.7
Tuesday	157	13.7
Wednesday	184	16.0
Thursday	196	17.0
Friday	226	19.7
Saturday	161	14.0
Sunday	91	7.9
TOTAL Number of Collisions	1150	100.0

OBSERVATIONS

Pedestrian casualty collisions were most likely to occur on Thursdays and Fridays, and least likely to occur on Sundays.

Table 8.3

CASUALTY COLLISIONS INVOLVING PEDESTRIANS: TIME PERIOD 1988

Time Period	N	%
11:00 p.m. - 2:59 a.m.	115	10.0
3:00 a.m. - 6:59 a.m.	34	3.0
7:00 a.m. - 10:59 a.m.	169	14.7
11:00 a.m. - 2:59 p.m.	216	18.8
3:00 p.m. - 6:59 p.m.	388	33.7
7:00 p.m. - 10:59 p.m.	211	18.3
Unspecified	17	1.5
TOTAL Number of Collisions	**1150**	**100.0**

OBSERVATIONS

Pedestrian casualty collisions were most likely to occur during the evening rush-hour period from 3:00 p.m. to 6:59 p.m. These collisions were least likely to occur during the early morning hours.

Table 8.4

CASUALTY COLLISIONS INVOLVING PEDESTRIANS:

LOCATION

1988

Location	N	%
Urban	1085	94.3
Rural	65	5.7
TOTAL Number of Collisions	**1150**	**100.0**

OBSERVATIONS

The majority of pedestrian casualty collisions (94.3%) occurred in urban areas. Only 5.7% occurred in rural areas.

Table 8.5

CASUALTY COLLISIONS INVOLVING PEDESTRIANS:

DRIVER ACTION*

1988

Driver Action	N	%	Driver Action in Total Casualty Collisions (All Vehicle Types) %
Driving Properly	478	45.1	45.7
Failed to Yield Right of Way	247	23.3	5.0
Backed Unsafely	37	3.5	0.7
Unsafe Speed	32	3.0	6.0
Failed to Observe Traffic Control Device	30	2.8	6.5
Ran Off Road	9	0.8	7.4
Improper Turn	8	0.8	1.5
Left of Centre	5	0.5	1.6
Improper Passing	4	0.4	0.8
Followed too Closely	4	0.4	5.4
Left Turn Across Path	3	0.3	4.9
Entered Lane When Unsafe	1	0.1	1.8
Other	203	19.1	12.3
TOTAL Number of Drivers	**1061**	**100.0**	

OBSERVATIONS

In 45.1% of the collisions involving pedestrians the driver action was noted as driving properly. However, compared to total casualty collisions, drivers involved in pedestrian casualty collisions were almost five times as likely to fail to yield right of way (23.3%).

* Based only on those cases where a driver action was specified on the collision report form. Driver action was unspecified in 104 cases.

Table 8.6

AGE OF PEDESTRIAN CASUALTIES

1988

Age in Years	Pedestrians Killed	Pedestrians Injured	Total Pedestrian Casualties N	Total Pedestrian Casualties %	Pedestrian Casualty Rate Per 10,000 Population* %
Under 5	1	53	54	4.5	2.6
5 - 9	4	167	171	14.2	9.0
10 - 14	2	136	138	11.4	8.0
15 - 19	4	146	150	12.4	8.3
20 - 24	3	109	112	9.3	5.5
25 - 29	3	97	100	8.3	4.1
30 - 34	1	74	75	6.2	3.1
35 - 44	8	118	126	10.4	3.6
45 - 54	4	77	81	6.7	3.7
55 - 64	4	60	64	5.3	3.6
65 and over	16	96	112	9.3	5.4
Unspecified	-	23	23	1.9	
TOTAL Number of Pedestrians	**50**	**1156**	**1206**	**100.0**	

OBSERVATIONS

The casualty rate per population was highest for pedestrians between the ages of 5 and 19. In particular, pedestrians aged 5 to 9 had the highest casualty rate. The lowest casualty rate was recorded for persons under five years. The greatest number of fatalities was in the age group 65 and over.

* Source - Based on estimates of the Alberta population by age groups and sex, June 1, 1988, Alberta Bureau of Statistics, February, 1989.

PEDESTRIAN CASUALTIES
RATE PER 10,000 POPULATION
1988

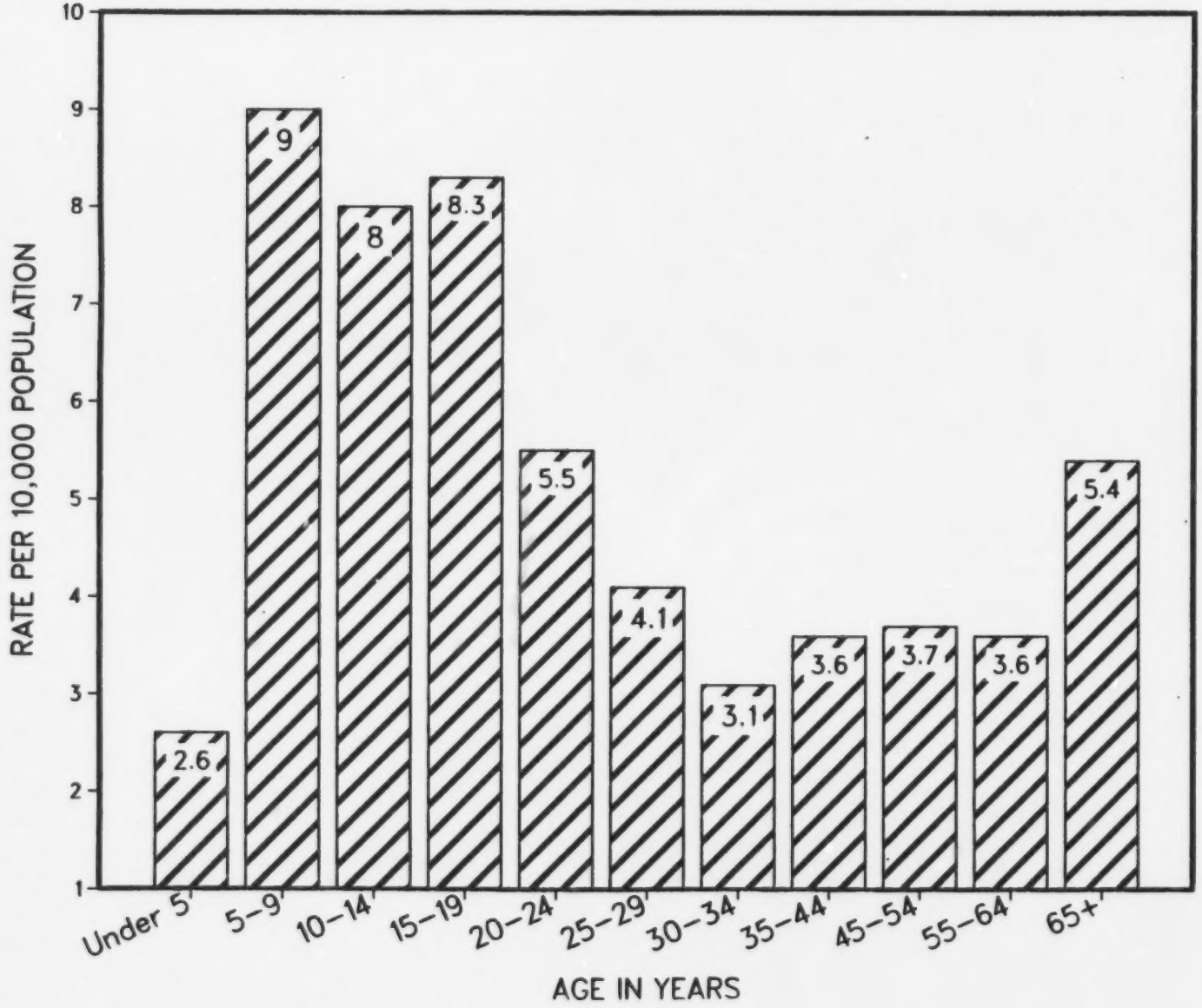


Figure 7

Table 8.7

CASUALTY COLLISIONS INVOLVING BICYCLES:

MONTH OF OCCURRENCE

1988

Month	N	%
January	5	0.7
February	7	1.0
March	22	3.2
April	71	10.2
May	101	14.5
June	120	17.2
July	100	14.3
August	96	13.8
September	74	10.6
October	63	9.0
November	29	4.2
December	9	1.3
TOTAL Number of Collisions	**697**	**100.0**

OBSERVATIONS

The majority of casualty crashes involving bicycles occurred during the months of May to August.

Table 8.8

CASUALTY COLLISIONS INVOLVING BICYCLES:

DAY OF WEEK

1988

Day of Week	N	%
Monday	85	12.2
Tuesday	108	15.5
Wednesday	130	18.7
Thursday	107	15.4
Friday	128	18.4
Saturday	76	10.9
Sunday	63	9.0
TOTAL Number of Collisions	**697**	**100.0**

OBSERVATIONS

Casualty collisions involving bicycles were more likely to occur on Wednesdays and Fridays.

Table 8.9

CASUALTY COLLISIONS INVOLVING BICYCLES:

TIME PERIOD

1988

Time Period	N	%
11:00 p.m. - 2:59 a.m.	31	4.4
3:00 a.m. - 6:59 a.m.	8	1.1
7:00 a.m. - 10:59 a.m.	93	13.3
11:00 a.m. - 2:59 p.m.	140	20.1
3:00 p.m. - 6:59 p.m.	278	39.9
7:00 p.m. - 10:59 p.m.	137	19.7
Unspecified	10	1.4
TOTAL Number of Collisions	**697**	**100.0**

OBSERVATIONS

The largest proportion of casualty crashes (39.9%) involving bicycles occurred over the evening rush-hour period of 3:00 p.m. - 6:59 p.m.

Table 8.10

CASUALTY COLLISIONS INVOLVING BICYCLES:

AGE AND SEX OF BICYCLIST

1988

Age of Bicyclist	Male		Female		TOTAL*	
	N	%	N	%	N	%
Under 5	14	2.0	2	0.3	16	2.3
5-9	82	11.7	20	2.8	102	14.5
10-14	109	15.5	45	6.4	156	22.2
15-19	127	18.1	39	5.6	167	23.8
20-24	59	8.4	36	5.1	96	13.7
25-29	35	5.0	8	1.1	43	6.1
30-34	21	3.0	9	1.3	30	4.3
35-44	27	3.8	3	0.4	30	4.3
45-54	11	1.6	2	0.3	13	1.9
55-64	3	0.4	3	0.4	7	1.0
65+	9	1.3	2	0.3	11	1.6
Unspecified	18	2.6	8	1.1	31	4.4
TOTAL Number of Bicyclists	**515**	**73.4**	**177**	**25.2**	**702**	**100.0**

OBSERVATIONS

The majority of bicycle casualty collisions involved male bicyclists. The 10-19 year old age group was most frequently involved in these collisions.

* Total includes bicyclists whose sex was not specified on the collision report form.

Table 8.11

CASUALTY COLLISIONS INVOLVING BICYCLES:

ACTION OF BICYCLIST*

1988

Action of Bicyclist	N	%	Driver Action in Total Casualty Collisions (All Vehicle Types) %
Driving Properly	218	34.5	45.7
Failed to Yield Right of Way	72	11.4	5.0
Failed to Observe Traffic Control Device	50	7.9	6.5
Entered Lane When Unsafe	27	4.3	1.8
Left Turn Across Path	21	3.3	4.9
Left of Centre	16	2.5	1.6
Improper Turn	11	1.7	1.5
Unsafe Speed	5	0.8	6.0
Improper Passing	5	0.8	0.8
Followed Too Closely	5	0.8	5.4
Failed to Signal	3	0.5	0.1
Ran Off Road	2	0.3	7.4
Backed Unsafely	1	0.2	0.7
Other	196	31.0	12.3
TOTAL Number of Bicyclists	**632**	**100.0**	

OBSERVATIONS

Improper actions on the part of the bicyclist were a contributory factor in nearly 66% of these casualty crashes. Compared to operators of other vehicles, bicyclists were more likely to fail to yield right-of-way, enter a lane when unsafe or fail to observe a traffic control device.

* Based only on cases where driver action was specified on the collision report form. Action of the bicyclist was unspecified in 70 cases.

TRAFFIC SAFETY ISSUES

ALCOHOL INVOLVEMENT

- A total of 11.3% of drivers involved in injury crashes were judged to have consumed alcohol prior to the crash, compared to 29.7% of drivers involved in fatal collisions. As the severity of the collision increased, the involvement of alcohol dramatically increased.

- In terms of involvement per 1,000 licensed drivers, males between 18 and 21 years of age were most likely to have been drinking before the crash. There were over six times as many male drivers as female drivers who had consumed alcohol prior to the collision.

- In 1988, alcohol related casualty crashes were most likely to have occurred between June and September, on Saturday, and between 11:00 p.m. and 2:59 a.m.

- Figure 8 provides a graphic representation of the involvement of drinking drivers in casualty collisions over the five years, 1984-1988.

RESTRAINT USE

- The collision report form collects restraint use information for **occupants killed or injured in a collision.** The form **does not** collect restraint use information for individuals involved in a collision who were **not** killed or injured.

- Most of the fatally injured occupants were not restrained at the time of the crash. However, the majority of occupants who were restrained at the time of the crash sustained only minor injuries.

Table 9.1

CONDITION OF DRIVERS IN CASUALTY COLLISIONS*

1988

Condition of Driver	Drivers in Fatal Collisions		Drivers in Non-Fatal Injury Collisions		Total Drivers In Casualty Collisions	
	N	%	N	%	N	%
Normal	352	68.8	16649	87.0	17001	86.5
Had Been Drinking	96	18.8	1279	6.7	1375	7.0
Alcohol Impaired	56	10.9	878	4.6	934	4.8
TOTAL Alcohol Involvement	**152**	**29.7**	**2157**	**11.3**	**2309**	**11.8**
Other	8	1.6	333	1.7	341	1.7
TOTAL Number of Drivers	**512**	**100.0**	**19139**	**100.0**	**19651**	**100.0**

OBSERVATIONS

Of drivers involved in injury collisions, 11.3% had consumed alcohol before the crash, compared to 29.7% in fatal collisions. As the severity of the collision increased, the involvement of alcohol dramatically increased. Overall, 11.8% of drivers involved in casualty collisions were judged to have consumed alcohol before the crash.

* Based only on cases where driver condition was specified on the collision report form. Driver condition was unspecified for 105 drivers in fatal collisions and 1998 drivers in non-fatal injury collisions.

INVOLVEMENT OF DRINKING DRIVERS IN CASUALTY COLLISIONS 1984–1988

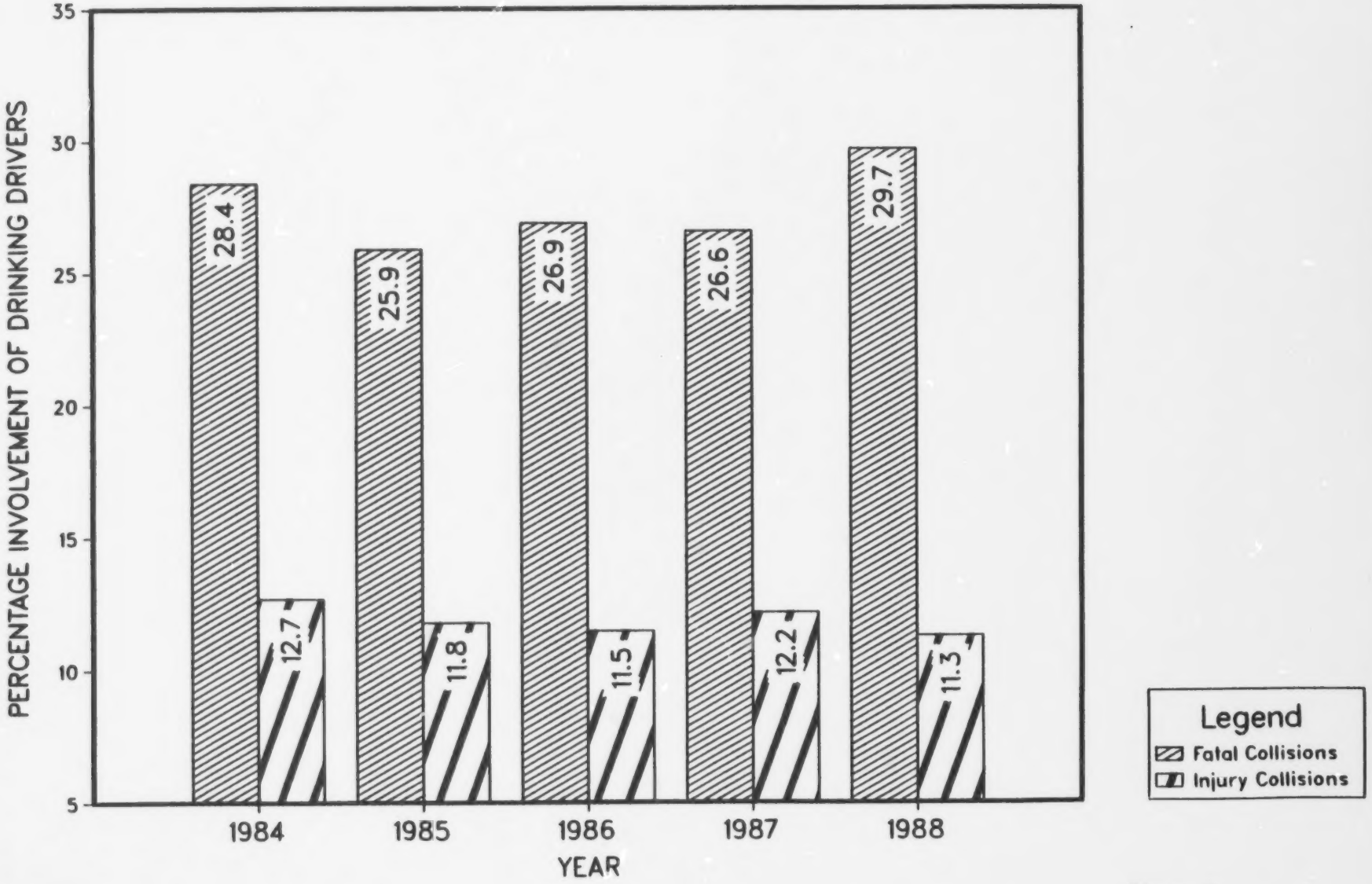


Figure 8

DRIVER CONDITION IN CASUALTY COLLISIONS
1988

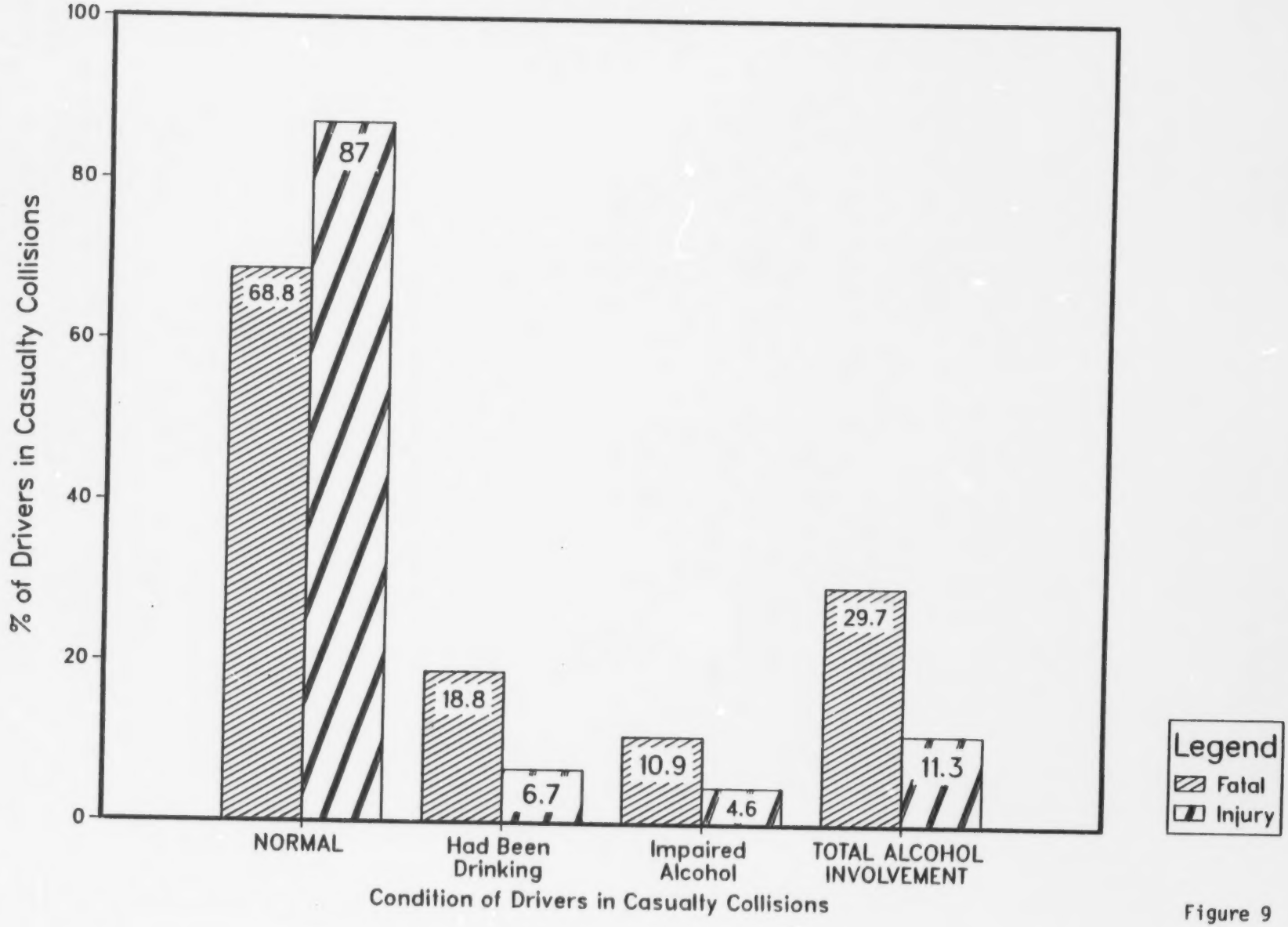


Figure 9

Table 9.2

ALCOHOL-INVOLVED CASUALTY COLLISIONS:

AGE AND SEX OF DRINKING DRIVERS

1988

Age in Years	Male N	Male %	Per 1000** Licensed Drivers	Female N	Female %	Per 1000** Licensed Drivers	Total* N	Total* %	Per 1000** Licensed Drivers
Under 16	5	0.2	0.3	2	0.1	0.2	7	0.3	0.3
16 - 17	108	4.7	3.5	13	0.6	0.5	122	5.3	2.2
18 - 19	234	10.1	6.1	41	1.8	1.2	275	11.9	3.8
20 - 21	232	10.0	5.8	29	1.3	0.8	261	11.3	3.5
22 - 24	303	13.1	4.3	50	2.2	0.8	353	15.3	2.6
25 - 29	372	16.1	2.5	73	3.2	0.6	446	19.3	1.6
30 - 34	241	10.4	1.7	33	1.4	0.3	275	11.9	1.0
35 - 44	265	11.5	1.3	48	2.1	0.3	314	13.6	0.8
45 - 54	121	5.2	1.0	7	0.3	0.1	128	5.5	0.6
55 - 64	59	2.6	0.6	6	0.3	0.1	65	2.8	0.4
65 and over	31	1.3	0.4	4	0.2	0.1	35	1.5	0.3
Unspecified	12	0.5		1	0.0		28	1.2	
TOTAL Number of Drivers	**1983**	**85.9**		**307**	**13.3**		**2309**	**100.0**	

OBSERVATIONS

Of those collision-involved drivers who had consumed alcohol, there were over 6 times as many male drivers as female drivers. The majority were male drivers under the age of 30. In terms of involvement per 1,000 licensed drivers, males 18-21 years of age are more likely to have consumed alcohol prior to a casualty collision than any other age group. After the age of 30, alcohol involvement decreased for both male and female drivers.

* Total includes drinking drivers whose sex was not specified on the collision report form. Drinking drivers include those indicated on the collision report form as having been drinking prior to the crash and those who were alcohol-impaired at the time of the crash. Whether or not the driver was actually charged is not taken into consideration by the collision report form.

** Source: Alberta Solicitor General - Motor Vehicles Division. Operator Statistics, December 31, 1988.

AGE AND SEX OF DRINKING DRIVERS INVOLVED IN CASUALTY COLLISIONS RATE PER 1000 LICENSED DRIVERS 1988

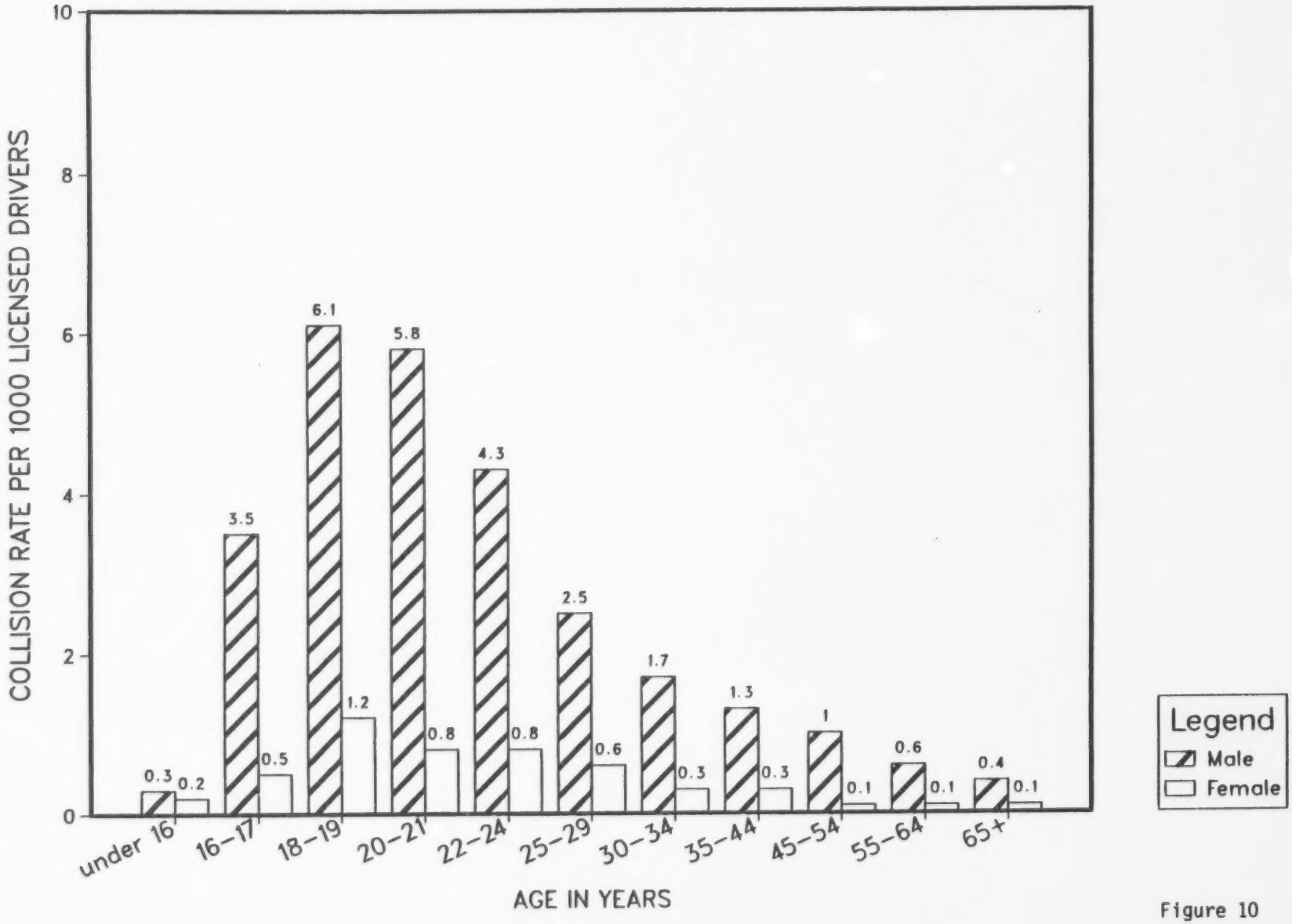


Figure 10

Table 9.3

ALCOHOL-INVOLVED CASUALTY COLLISIONS:

MONTH OF OCCURRENCE

1988

Month	Fatal Collisions N	Fatal Collisions %	Non-Fatal Injury Collisions N	Non-Fatal Injury Collisions %	Total Casualty Collisions N	Total Casualty Collisions %
January	2	1.4	124	5.9	126	5.6
February	5	3.4	120	5.7	125	5.6
March	17	11.6	158	7.6	175	7.8
April	21	14.3	189	9.1	210	9.4
May	10	6.8	164	7.9	174	7.8
June	9	6.1	216	10.3	225	10.1
July	19	12.9	230	11.0	249	11.1
August	16	10.9	201	9.6	217	9.7
September	12	8.2	209	10.0	221	9.9
October	17	11.6	185	8.9	202	9.0
November	8	5.4	149	7.1	157	7.0
December	11	7.5	142	6.8	153	6.8
TOTAL Number of Collisions	**147**	**100.0**	**2087**	**100.0**	**2234**	**100.0**

OBSERVATIONS

The months of June to September accounted for the largest proportion of alcohol-involved casualty collisions. The months of January, February and December accounted for the smallest proportion of alcohol-involved casualty collisions.

Table 9.4

ALCOHOL-INVOLVED CASUALTY COLLISIONS:

DAY OF WEEK

1988

Day of Week	Fatal Collisions N	Fatal Collisions %	Non-Fatal Injury Collisions N	Non-Fatal Injury Collisions %	Total Casualty Collisions N	Total Casualty Collisions %
Monday	8	5.4	126	6.0	134	6.0
Tuesday	16	10.9	188	9.0	204	9.1
Wednesday	15	10.2	222	10.6	237	10.6
Thursday	13	8.8	277	13.3	290	13.0
Friday	26	17.7	360	17.2	386	17.3
Saturday	44	29.9	541	25.9	585	26.2
Sunday	25	17.0	373	17.9	398	17.8
TOTAL Number of Collisions	147	100.0	2087	100.0	2234	100.0

OBSERVATIONS

The highest number of alcohol-involved fatal (29.9%) and injury (25.9%) collisions occurred on Saturdays. The smallest number of alcohol-involved casualty collisions occurred on Mondays.

Table 9.5

ALCOHOL-INVOLVED CASUALTY COLLISIONS:

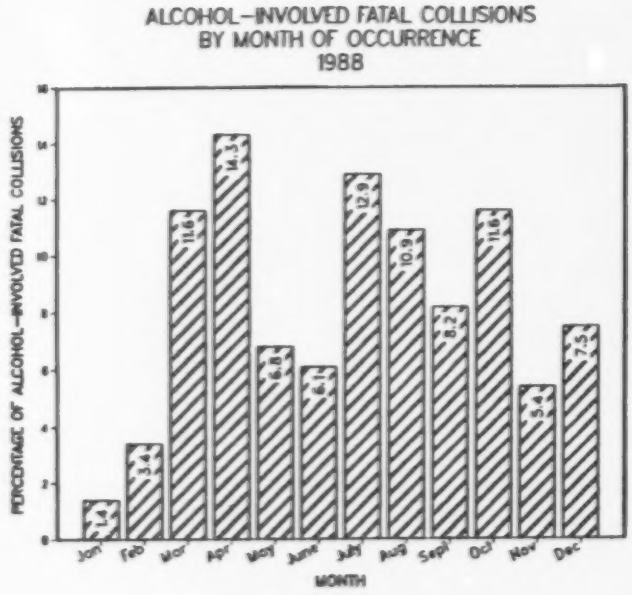
TIME OF OCCURRENCE

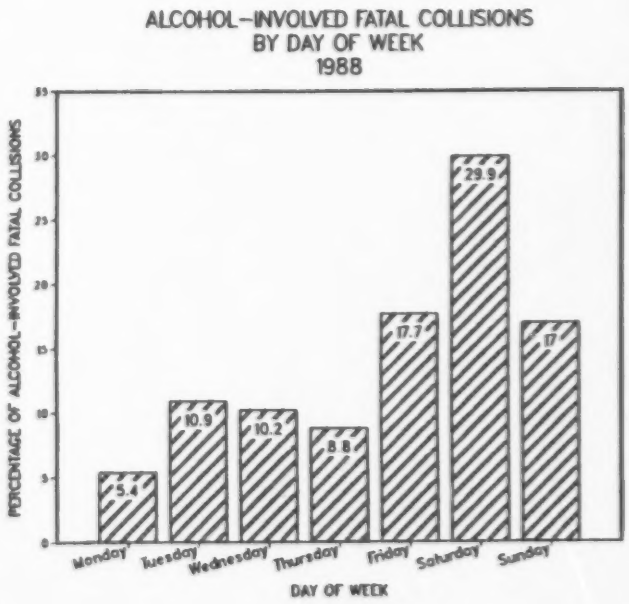
1988

Time Period	Fatal Collisions N	Fatal Collisions %	Non-Fatal Injury Collisions N	Non-Fatal Injury Collisions %	Total Casualty Collisions N	Total Casualty Collisions %
11:00 p.m. - 2:59 a.m.	42	28.6	689	33.0	731	32.7
3:00 a.m. - 6:59 a.m.	32	21.8	386	18.5	418	18.7
7:00 a.m. - 10:59 a.m.	12	8.2	84	4.0	96	4.3
11:00 a.m. - 2:59 p.m.	10	6.8	98	4.7	108	4.8
3:00 p.m. - 6:59 p.m.	16	10.9	286	13.7	302	13.5
7:00 p.m. - 10:59 p.m.	34	23.1	483	23.1	517	23.1
Unspecified	1	0.7	61	2.9	62	2.8
TOTAL Number of Collisions	**147**	**100.0**	**2087**	**100.0**	**2234**	**100.0**

OBSERVATIONS

The late night/early morning time period (11:00 p.m. - 2:59 a.m.) was most likely to record alcohol-involved casualty collisions (32.7%). The morning hours (7:00 a.m. - 10:59 a.m.) were least likely to record alcohol-involved casualty crashes (4.3%).


ALCOHOL–INVOLVED FATAL COLLISIONS
BY MONTH OF OCCURRENCE
1988
PERCENTAGE OF ALCOHOL–INVOLVED FATAL COLLISIONS
1.4
3.4
11.6
14.3
6.8
6.1
12.9
10.9
8.2
11.6
5.4
7.5
Jan
Feb
Mar
Apr
May
June
July
Aug
Sept
Oct
Nov
Dec
MONTH


ALCOHOL–INVOLVED FATAL COLLISIONS
BY DAY OF WEEK
1988
PERCENTAGE OF ALCOHOL–INVOLVED FATAL COLLISIONS
5.4
10.9
10.2
8.8
17.7
29.9
17
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Sunday
DAY OF WEEK

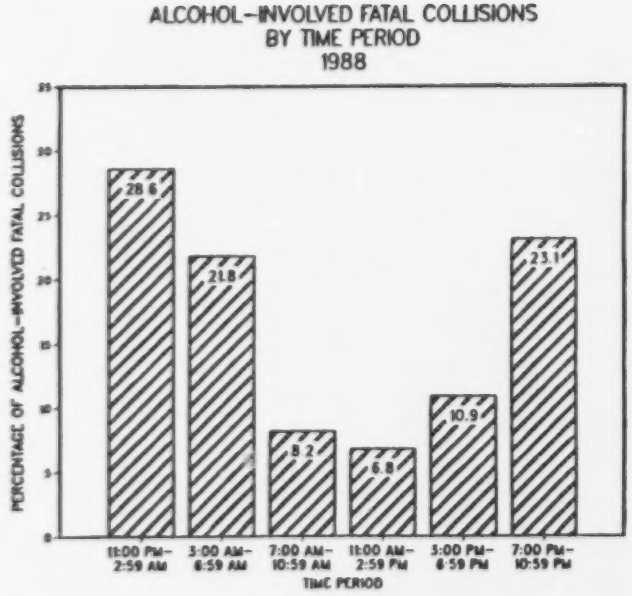

ALCOHOL–INVOLVED FATAL COLLISIONS
BY TIME PERIOD
1988
PERCENTAGE OF ALCOHOL–INVOLVED FATAL COLLISIONS
28.6
21.8
8.2
6.8
10.9
23.1
11:00 PM–
2:59 AM
3:00 AM–
6:59 AM
7:00 AM–
10:59 AM
11:00 AM–
2:59 PM
3:00 PM–
6:59 PM
7:00 PM–
10:59 PM
TIME PERIOD

Figure 11

Table 9.6

RESTRAINT USE OF OCCUPANT CASUALTIES

AND INJURY SEVERITY

1988

Injury Severity	Percent Using Restraints
Fatal	38.8
Major	58.4
Minor	82.0

OBSERVATIONS

The collision report form collects seat belt use for killed and injured occupants only. Most of the fatally injured occupants were not restrained at the time of the crash. However, the majority of occupants who were restrained at the time of the crash sustained only minor injuries.

The mandatory seat belt law was in force for the entire year of 1988. The fine for non-compliance was $25.00. This may have caused some injured occupants to report wearing seat belts when they were not.

Injury Severity

Fatal - A fatal injury is a death of a person that occurs as a result of a motor vehicle collision within 30 days of the collision.

Major - Persons with injuries or complaint of pain that went to the hospital and were subsequently admitted even if for observation only.

Minor - Persons with injuries or complaint of pain that went to the hospital were treated in emergency (or refused treatment) and SENT HOME without ever being admitted to the hospital.